Small and Micro Business Enterprises (SMBEs) in Addis Ababa, Ethiopia: Development and Poverty Reduction through Information and Communication Technologies (ICTs), with particular reference to the hotel industry and associated businesses

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Declaration

I, Wegene Demeke, affirm that this thesis submitted at the University of West London is my own work, except expressed or referenced accordingly.

Abstract

The role of Information and Communication Technologies (ICTs) as a facilitator and enabler for development and poverty reduction has been increasingly recognised by many international organisations. ICTs need to be diffused in society to have their effects realised. The diffusion of ICTs in developing countries is lagging behind the developed countries creating the digital divide. Although the divide is reducing in many sub-Saharan countries, in Ethiopia it is increasing. The purpose of this study is to find the factors that affect the adoption and non-adoption of ICTs in small and micro businesses in Addis Ababa, Ethiopia. A number of sectors were explored and the hotel and tour operator sector was found to have both adopters and non-adopters. The hotel and tour operator business in Addis Ababa was selected to be the study population. The main research question was to find the connection between the political, economic, and social factors and the adoption and use of ICT in this sector.

While cultural, social-economic, political and legal factors affect the adoption of innovation in both developed and developing countries, these factors are more pronounced in the developing countries. Rogers' diffusion of innovation theory is a good initial theoretical candidate for understanding the ICT diffusion factors. However, to include the national level factors, a theoretical framework was proposed based on Rogers' diffusion of innovation theory.

An exploratory research method was used to shed light on the adoption and non-adoption factors. It uses mixed methods research methodology in two phases to collect data from owners/managers. In the first phase in-depth interviews were conducted with 16 hoteliers who adopted ICT in their businesses. In the second phase survey questionnaires were used to collect data from 128 hoteliers and 57 tour operators. In this phase both adopters and non-adopters of ICT were included. Data were analysed using NVivo and Statistical Package for Social Sciences (SPSS) software packages.

This study argues that the telecommunications monopoly, the non-affordability of ICT products and services, the general economic situation, lack of knowledge and awareness of the technology, and lack of legal protection for small hotels affect the adoption negatively. On the other hand, network externalities, competition among hoteliers, and major customers (foreign) act as a facilitator agent and have a positive impact on the adoption of ICT.

The researcher argues that the political, social, economic, technological and legal policies are the sources of the adoption and non-adoption factors of ICTs in the hotel and tour operator business.

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Dedication

This thesis is dedicated to my mother, Kesela Woldemariam, who passed away a few months before the completion of this thesis. Her unwavering support, love, and memories are a source of energy and continue to be so. It is also dedicated to my father, Demeke Woldetsadik, his love, dedication and family commitment will always be with me.

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List of Acronyms and Abbreviations

AACC	Addis Ababa Chamber of Commerce
ADB	African Development Bank
ACH	Automated Clearing House
AU	African Union
AARH	Agency for the Administration of Rented Houses
ANT	Actor-Network Theory
BDS	Business Development Services
CPJ	Committee to Protect Journalists
CyPRG	Cyberspace Policy Research Group
DFID	Department for International Development UK
DOTForce	Digital Opportunity Rask Force
ECA	Ethiopian Economic Association
ECSA	Ethiopian Central Statistics Agency
EDI	Electronic Data Interchange
EEPC	Ethiopian Electric Power Corporation
EMA	Ethiopian Mapping Agency
ERCA	Ethiopian Revenues and Customs Authority
ETA	Ethiopian Telecommunications Agency
ETC	Ethiopian Telecommunications Corporation
FDI	Foreign Direct Investment
GEM	Gender Empowerment measure
GDI	Global Diffusion of Internet
GDP	Gross Domestic Product
GNH	Gross National Happiness
GNI	Gross National Income
GTP	Growth and Transformation Plan
HDI	Human Development Index
IBTE	Imperial Board of Telecommunication of Ethiopia
ICANN	Internet Corporation for Assigned Names and Numbers

ICTs	Information and Communication Technologies
IDI	ICT Development Index
IFIP	International Federation for Information Processing
IMF	International Monitory Found
IPB	ICT Price Basket
ITU	International Telecommunication Union
LCC	Least Connected Countries
LDC	Least Developed Countries
MCT	Ministry of Culture and Tourism
MDGs	Millennium Development Goals
MFD	Ministry of Finance and Development
MICT	Ministry of Communications and Information Technology
MH	Ministry of Housing
MSEDA	Micro and Small Enterprise Development Agency
MTI	Ministry of Trade and Industry
NEPAD	New Partnership for Africa's Development
NIE	New Institutional Economic
NVIVO	Qualitative research tool produced by QSR
OECD	Organisation for Economic Co-operation and Development
ONI	Open Net Initiative
PASDEP	Plan for Accelerated and Sustained Development to End Poverty
PESCTEL	Political, Economic, Social, Cultural, Technological, Environmental and Legal
PMS	Property Management System
TAM	Technology Acceptance Model
SCOT	Social Construction of Technology
SMBEs	Small and Micros Business Enterprises
SMEs	Small and Medium Enterprises
SPSS	Statistical Package for the Social Sciences
SST	Sociology of Science and Technology
UN	United Nations

UNDP	United Nations Development Programme
UNECA	United Nations Economic Commission for Africa
WB	World Bank
WITFOR	World Information Technology Forum
WSES	Web Site Evaluation System
WSIS	World Summit on the Information Society
WTO	World Trade Organisation
ZTE	Zhanxing Telecom Corporation

Chapter 1 Introduction

1.1 Introduction

This study is about society and technology. Among the many challenges faced by a developing country like Ethiopia, one of the most prominent is poverty, it is hugely difficult to solve and has an enormous impact on society. ICTs have been cited by many international organisations as amongst the critical components in solving poverty in developing countries (ITU 2003, UN 2001).

The United Nations (UN) General Assembly adopted Resolution 56/258, is devoted to information and communication technology. It recognises it as a critical component in creating a positive impact, and its importance in reducing poverty is stated in the resolution as:

> *"Recognising that information and communication technologies are among the critical determinants for creating a global knowledge-based economy, accelerating growth, raising competitiveness, promoting sustainable development, eradicating poverty and facilitating the effective integration of all countries into the global economy."*

This resolution was passed in 2002 and the impact of ICTs in many developed countries has started showing marked improvements. However, this is not true for all developing countries. The resolution also recognises that there are major challenges for many developing countries, such as: poor infrastructure, shortages of human resources, a shortage of finance to increase capacity-building, including the low level of the general economic situation. All these have created barriers and hinder the diffusion of ICTs in developing countries, curtailing the participation of many of these developing countries in the new information revolution (UN 2002).

ICT creates a new business paradigm: creating efficiency, providing business information, reducing cost, in general providing competitive advantages, and opening new markets (Wakins 2007/2008). The availability of ICT infrastructure for

Small and Medium Enterprises (SMEs) helps them to facilitate communication with their customers and enables them to trade online. The integration of the banking system using ICT enables them to receive payments from their customers, hence this payment facility plays a crucial role in enabling SMEs in developed countries to become competitive and in the process generates employment and contributes to the Gross Domestic Product (GDP) in those countries.

The mobile phone enables the poor and the marginalised to participate in the economic activities of society. For example, in the last decade, the increase in the use of mobile phone banking (M-Pesa) in countries like Kenya and Tanzania has shown a positive contribution in creating opportunities to participate in economic activities. According to the African Development Bank (ADB), in Africa SMEs account for 60% of the continent's output and 80% of employment (ADB 2005). This is also true for developed countries: SMEs generate 50% of GDP in these countries (Patricof & Sunderland 2006). One of the factors for SMEs in developed countries to generate a high level of GDP is the diffusion and use of ICTs in their daily business practice.

It is widely documented that SMEs are the engines of wealth creation in both developing and developed countries (Beck et al. 2005). This, coupled with ICTs power of information management and delivery, will enhance the role of SMEs in generating development. Furthermore, it will create enabling conditions to expand the market reach of these businesses.

The diffusion of mobile phones is very encouraging in many sub-Saharan countries. However, when one sees the data from the International Telecommunication Union (ITU), the diffusion of ICT is not encouraging in Ethiopia and this study attempts to find out why. In general, the diffusion of ICT is very low in Ethiopia, and in particular, there is very low uptake by Small and Micro Business Enterprises (SMBEs). This research aims to find the factors that affect the adoption of ICT by SMBEs. This study is an attempt to understand both the macro

and micro factors that facilitate and hinder ICT adoption/diffusion in the context of a developing country.

The literature indicates that there is a lack of ICT knowledge and awareness, poor infrastructure, lack of appropriate business applications and skilled human resources at the national, organisational, and individual levels. The adoption of ICT varies from country to country; it is governed by the conditions created partly by socio-economic conditions, which are mainly created by incumbent government policies, and also partly by international and regional factors. The adoption of new technology is a complex social process. The individuals involved in the adoption process make the final decision concerning adoption or rejection of the innovation; however, the individual in turn is influenced by the local context.

This research focuses on finding the adoption resistance/facilitator factors that affect the adoption/rejection of ICTs in the hotel and tour operator business in Addis Ababa, Ethiopia. One of the reasons for the selection of this sector is that it has both adopters and non-adopters; this provides a perspective from both adopters and non-adopters and it provides insights into both factors that affect adoption and non-adoption.

To understand the factors that affect ICTs' adoption/rejection in society, researchers have many theories and frameworks that attempt to explain the relationship between innovation and society. The researcher argues that the existing theories do not explain the adoption/rejection factors. It attempts to formulate a theoretical framework that explains the adoption and rejection of ICTs in the hotel and tour operators business in Addis Ababa, Ethiopia, based on Rogers' diffusion of innovation theory.

1.2 Information and Communication Technologies (ICTs)

ICTs include many technologies and systems that are used for information generation, storing, processing and communicating. Different researchers define ICT differently. For example, Weber and Kauffman (2011 p. 684) define it as “ICT as technologies that support data and analysis, as well as data and information transmission and communication via the Internet and other means”. According to the above definition, some of the ICT includes radio, television, computer, network, Wi-Fi, mobile phone, word-processing, Excel and e-mail. This is not an exhaustive list of ICTs. In this research, ICTs is referring to the adoption of mobile phone, computer, broadband, website, and e-mail by hoteliers and tour operators.

1.3 The role of ICT for development, poverty reduction and empowerment of the poor

The extreme poverty level in the third world is well documented; to solve it, it requires coordinated efforts by governments, individuals, social groups, and other stakeholders, supported by financial, technical, and other resources to create the conditions for development and poverty reduction. One of the technical resources that facilitates development is ICT; it plays a vital role in creating enabling conditions for stakeholders to reduce poverty.

There are many initiatives by international, regional, and national organisations to use ICT for development, poverty reduction, and empowerment of the poor. For example, the United Nations (UN) passed Resolution 56/258 on the role of ICT for development and poverty reduction. Other notable efforts are the formation of the Word Summit on the Information Society (WSIS) that identified ICT as an important tool in meeting the Millennium Development Goals (MDG).

Furthermore, the New Partnership for Africa’s Development (NEPAD) also identified the critical role of ICT for development and poverty reduction. Moreover, the G8 formed the Digital Opportunity Task Force (DOTForce), which focuses on

how to reverse the “digital divide” between the developed and developing countries. To realise the role of ICT in the developing countries for development and poverty reduction and empowering the poor, it needs to be diffused in society to have the desired effects.

The role of ICTs for sustainable development is summed up by Sachs (2008) in the following eight points:

- The ubiquitous connectivity of a region through ICT to the world, global politics and culture;
- The effective division and allocation of local and global labour through the coordination of work via the Internet;
- Scale size in terms of the reach and range that ICT offers across networks for global communication;
- Global replication of standard processes supported by ICT;
- ICT’s role in providing a platform for accountability, monitoring and evaluation of economic health and other human and organisational activities;
- The matching of buyers and sellers for economic exchange;
- Building communication of interest via the tools of social networking on the Internet;
- Education and training in the context of distance learning.

1.4 Idea development and research process

The growing interest of many researchers in ICT for socioeconomic development has resulted in the formulation of a theory known as Information and Communication Technologies for Development (ICT4D) (Heeks 2008). The aim is to use ICT as an enabler and a tool for creating the conditions to improve the socioeconomic situation of developing countries. One of the biggest challenges for a country like Ethiopia is to alleviate many from abject poverty. Poverty is a multifaceted phenomenon; one of its manifestations is lack of opportunities. In

developing countries, the main cause of poverty in the urban environment is lack of employment. According to the Ethiopian Central Statistics Agency (ECSA), the majority of the employed in the urban population (50.6%) works in micro business enterprises, hence SMBEs play a major role in generating employment. Furthermore, the contribution to GDP by SMBEs is critical in generating development in developing countries.

This research is inspired by the idea of how ICT can be used to reduce poverty through its applications such as:

- Its ability to create enabling conditions for businesses and individuals to fulfil their potential,
- Its ability to empower the disadvantaged and the marginalised sections of society,
- Its ability to create opportunities,
- Its applicability and use in almost all sectors of the economy,
- Its influence on the social life of society,
- Its ability to create networks of association for people with similar interests.

In spite of the potential advantages and use of ICT, the level of ICT adoption is not encouraging, particularly in Ethiopia. The opposition to adoption of ICT may come from different levels and various sources. At the organisational level, opponents to the adoption of ICT perceive the advantages and uses of ICT differently from the adopters. Other opponents include users who use rival technology, or on the personal level, individuals who reject ICT on grounds such as; not appropriate or fitting to their requirements or in general consider it not fit for purpose. Other sources include contexts such as socio economic conditions, the political system, technology, environmental or legal issues, which can be facilitators or opponents for the adoption of ICT.

The context on the ground indicates that the level of diffusion of ICT in Ethiopia is low. The following treads of thoughts and contemplations assisted in the

formulation of the research questions and guide the research methods to investigate the adoption of ICT by hoteliers and tour operators.

- The high level of poverty exhibited in the developing countries;
- ICTs' role as a facilitator and enabler for development and poverty reduction;
- Adoption/diffusion of ICT as a pre-condition to realise its potential;
- To find the factors that affect the adoption/diffusion of ICT;
- Exploration of current theories that explain the factors that affect adoption/rejection of ICT in Addis Ababa;
- Explain the factors that affect the adoption of ICT using a theoretical framework for further study in developing countries;
- Analyse possible sources of government policy and other factors that affect the adoption of ICT.

1.5 Research background

Many researchers have broadly accepted the role of ICT as a facilitating agent for development (Sachs 2008, Easterly 2006, Heeks 2012, Castells 2010). However, other researchers argue that the claim that ICTs have a potential to bring about development and reduce poverty, particularly in developing countries, is not based on sound economic theory. For example, Avgerous (2003) argues that ICT is a result of development rather than the facilitator of it. On the other hand, many researchers in developing countries clearly indicate ICTs' role as a facilitator of economic growth. Some studies in developing countries, for example in Kenya and Tanzania, indicate ICTs' role as a development facilitator.

1.6 Problem identification

ICTs have a role in creating enabling conditions for SMBEs to generate economic growth and alleviate poverty. They can help to expand the market reach of SMBEs and generate employment. It is widely documented that SMBEs and SMEs are the engines of wealth creation in both developing and developed countries (Patricof

and Sunderland, 2006). If coupled with ICTs' power of information management and delivery, the role of SMBEs should be sufficiently enhanced to generate employment and alleviate poverty in Addis Ababa. SMBEs lack ICT knowledge, infrastructure, business applications, and access to information have affected economic growth and poverty reduction.

The diffusion of mobile phones, computers, broadband, and the use of e-mail for communication is increasing in developing countries. This increase in adoption is also noted in sub-Saharan countries. The growing phenomenon of the use of mobile phones for financial services has been a catalyst for the adoption of mobile phones elsewhere in Africa, including Kenya and Tanzania. However, the very low level of penetration of mobile phones, computer ownership, and broadband adoption and use have been recorded in Ethiopia.

The lack of diffusion of ICT in SMBEs in Addis Ababa has received no research attention in the past and this research is an attempt to close this gap. Furthermore, it tries to discover the theoretical framework that explains the phenomenon under investigation. In addition, it tries to identify the factors that facilitate the adoption and the barriers to ICTs' adoption in the hotel and tour operator business in Addis Ababa.

1.7 Research questions

This investigation aims to discover the relationship between economic and social factors and the adoption and use of ICTs by SMBEs, with particular reference to the hotel sector and tour operator business in Addis Ababa, Ethiopia.

It also investigates the political, technological, environmental and legal factors that facilitate or hinder the adoption or rejection of innovation by individuals or organisations. In addition, it also investigates the impact, or lack of it, of ICT, such

as creating efficiency, cost reduction, and creating a sustainable business environment for development and poverty reduction.

The central question of the research is why the adoption of ICT is very low in Ethiopia. Arising from this general question are the following specific questions:

RQ1: What is the relationship between political, economic and social factors and the adoption and use of ICTs by small hotels and tour operators in Addis Ababa, Ethiopia?

RQ2: What are the factors that facilitate the adoption of ICT in the hotel and tour operators business?

RQ3: What are the resistance factors for the adoption of ICT in the hotel and tour operators business?

RQ4: What ICT tools are critical for the hoteliers and tour operators?

RQ5: What are the main ICT uses for the hoteliers and tour operators?

RQ6: What are the effects of national policies on ICT diffusion in hotels and on tour operators?

1.8 Research aims and objectives

The following are the research aims and objectives.

Aims:

The aims of this research are:

- To examine the existing theoretical and conceptual frameworks of diffusion of innovation,

- To critically evaluate the applicability of the existing theoretical framework for the proposed research,
- To assess the factors that affect the adoption of ICTs in the hotel and tour operator business in Addis Ababa, Ethiopia, using the selected or adopted theoretical framework,
- To find how ICTs are used in the sector.

Objectives:

The objectives of this study are:

- To understand the diffusion facilitator factors for ICT adoption in the hotel sector,
- To understand the barriers, diffusion resistance agents, for the adoption of ICT in the hotel and tour operator business,
- To formulate a method of evaluating the existing theoretical frameworks to explain the study under investigation,
- To assess the applicability of the existing theoretical framework for the proposed study, to guide the research processes

There are major obstacles that restrict the diffusion of ICT in developing countries. The data from ITU indicate that mobile phone diffusion in developing countries is encouraging, but that Internet diffusion is very low. In addition, the data show that the roles played by the diffusion opposition forces are detrimental to the success or failure of ICT diffusion.

The advantages of ICTs for SMBEs have not been realised in developing countries, particularly in the case of Ethiopia, because it is mainly hindered by lack of diffusion of ICT and also by very weak ICT infrastructure. Among other things, the price of ICT equipment is out of reach for many people. The cheapest computer costs about 10,000 Birr (local currency in Ethiopia) in 2009, while the average income is 600 Birr per month; this is more than 16 months' salary for the average income earner. In addition, the local currency was recently depreciated by

16% by the government; as all ICT equipment is imported from abroad it will be at least 16% more expensive. This is on top of the 40% import tax on ICT equipment, further restricting the diffusion of ICT.

Furthermore, for those who can afford to buy a computer, they are not able to use it to its full capacity as its use is restricted by the lack of affordable broadband service to connect to the Internet in the country. The price of broadband services is the second most expensive in the world. As result, the number of broadband customers in Ethiopia is very low; there were 0.1 per 100 inhabitants in 2010 and 0.3 in 2011 (ITU 2012).

The data from the International Telecommunication Union (ITU) also shows very low diffusion of Internet in the country. The Global Diffusion of Internet (GDI) study has been conducted for a number of years on a countrywide basis; this is the gold standard measurement of diffusion of Internet in a country. The GDI measures diffusion of Internet using six measures and each measure has 4 levels. The findings of the GDI study for Ethiopia, conducted in 2002, gave a total of six points from a possible 20. The result shows a lack of ICT presence in almost all measures; in particular, sectoral absorption was 0.5, indicating very low diffusion of the Internet in the business environment.

1.9 Theoretical framework development

The study explores various theoretical diffusion frameworks, and Rogers' diffusion of innovation theory was selected, as it is the best fit for the study context. Rogers' diffusion theory was developed as a result of many studies conducted in developed countries. Though Rogers' theoretical framework explains the adoption/diffusion phenomenon in developing countries, there is significant macro context variation between developed and developing countries. The variation of the macro factors between developing and developed countries affects the direct application of these theories and models in developing countries like Ethiopia. To

adjust for this variation of contexts a new theoretical framework has been developed based on Rogers' innovation theory. The proposed theoretical framework helps to guide this research and could be used in similar contexts in developing countries by other researchers.

The study identifies two interrelated factors that affect the adoption/rejection of ICT in the hotel and tour operator business in Addis Ababa, Ethiopia. The first are the factors originating from individual and organisational characteristics and the second from national level factors. The individual factors are explained by Rogers' diffusion of innovation theory. While the national factors arise from political, economic, social, cultural, technological, environmental and legal (PESCTEL) factors, hence both national level factors and Rogers' theory of diffusion explain the adoption of ICTs. The PESCTEL model analyses the external factors that affect the phenomenon under study, and has been used in many fields, including management, marketing, and recently, environmental and sustainability studies. For example, Shilei and Yong (2009) used the PESTEL model to study the installation of energy efficiency systems in existing residential buildings in China. The PESCTEL framework was originally proposed by Francis J. Aguilar as ETPS (Economic, Technical, Political and Social) for his 1965 dissertation at Harvard, entitled "Formulating Company Strategy: Scanning the Environment", which was published as "Scanning the Business Environment" by Macmillan in New York in 1967.

1.10 Research method

Exploratory research methodology was found to be appropriate for this research for the following two reasons.

- There is no significant research conducted in Addis Ababa on the adoption of ICT by SMBEs. Hence, there are no references on which to base the research strategy or design.

- Exploratory research methodology was deemed to provide a means by which to find the context on the ground to formulate the appropriate research design, data collection strategy, and data analysis method.

The exploratory research method facilitates the research design. Mixed research methodology was used to collect and analyse data in two phases.

1.11 Data collection and data analysis

The data collection and analysis were conducted in two phases. In the first phase, data were collected through detailed interviews with 16 hotel owners/managers. Hoteliers that adopted ICTs, have mobile phone and computers in their hotels and provide Internet WI-FI services for their customers. Interviews were conducted in the offices of the hotel owners/managers; all interviews were audio-recorded except for one participant.

The second phase of data collection focused on hoteliers and tour operators. Data were collected on a face-to-face basis from the owners/managers. The survey research was conducted with the aid of a semi-structured questionnaire and carried out face-to-face with hoteliers and tour operators.

The survey data collected from ICT adopted hoteliers were evaluated using content analysis software, NVIVO, while the data collected from hoteliers and tour operators were analysed using the SPSS.

1.12 Scope and coverage

This study aimed to find the factors that affect the adoption of ICTs in the hotel and tour operator business in Addis Ababa Ethiopia. The ICTs included in the study are mobile phones, computers, Internet, website, and e-mail systems.

1.13 Limitations of the study

The study focuses on the hotel and tour operator sector located in Addis Ababa. The limitations of the study are:

- Limited geographical coverage;
- Its focus on only the hotel and tour operator sector of the economy;
- The unique characteristics of this sector to use ICT to satisfy the customer base may not be available in other sectors of the economy;
- Lack of cooperation from stakeholders limits the findings;
- Sample selection may not be representative.

1.14 Significance of the study

The results of the research should be significant in that they:

- Lead to the understanding of the economic and social factors that determine the adoption and use of ICTs in the hotel and tour operator business;
- Provide insight into the sources of diffusion facilitator and resistance factors and their sources at macro level;
- Identify the critical success factors for the adoption and use of ICT in the hotel and tour operator business;
- Identify how ICT is viewed from the point of view of the hotel and tour operator business, which should lead to a better understanding, and enable policy shapers and decision makers to generate possible solutions;
- Contribute substantial and original findings on economic and social factors, barriers and the role played by stakeholders that determine the impact of ICTs on the wider developing world;
- Identify the adopters of ICTs and see what influences them;
- Identify the opponents of the adoption of ICTs and their influence;
- Lead to extrapolating the results to other similar socioeconomic countries in the developing world;

- Lead to the understanding of how ICT is diffused in the hotel and tour operator business;
- Lead to the understanding of how ICT contributes to the competitiveness of the hotel and tour operator business in Addis Ababa;
- Lead to the understanding of local and regional ICT policies that influence the adoption of ICT for development and poverty reduction.

1.15 Structure of the thesis

This thesis is organised into 9 chapters, Chapter 1 sets out the motivation for the study, including the identification of the problem and research questions. It also presents the outline of the study as well as the scope, limitation and expected significance of the research.

Chapter 2 explains the research background and context. It explores the demographic, socio-economic, and political context of Ethiopia in brief. It then presents the history of ICT and the hotel sector. It concludes by presenting the diffusion of the Internet in Ethiopia.

Chapter 3 presents an overview of the literature on diffusion studies. In particular, ICT's adoption and diffusion studies, it highlights how individual, organisational, national, and international level factors affect the diffusion of technology in society.

Chapter 4 presents the theoretical frameworks that guide the analysis of the research. Four distinct theoretical approaches, that help understanding of the adoption and diffusion of innovation in society, are discussed. Furthermore, based on the works of Rogers' diffusion of innovation theory, a theoretical framework is developed and presented to explain the diffusion of innovation in the context of Ethiopia. The proposed theoretical framework is presented and discussed and focuses on its relevance to this study and to other similar studies in developing countries.

Building on the previous chapters, Chapter 5 presents the research method. It discusses a number of research methods, and the selected mixed methods are presented. Furthermore, it discusses the difficulties encountered before and during data collection and the ethical issues that arise from it.

Chapter 6 and 7 contain the empirical data central to this research. Chapter 6 presents the interview data collected from 16 hoteliers. All the hoteliers were ICT adopters. It presents the findings, the factors that facilitate the adoption and the resistance factors that caused difficulties in the adoption processes.

Chapter 7 presents the results of the survey data from 128 hoteliers and 58 tour operators. In this sample, there are ICTs adopters and non-adopters. It provides details of which ICTs tools are adopted and it also presents the factors for their adoption on various levels.

Chapter 8 presents the analysis and discussions of the findings of the previous two chapters of data findings. The findings were analysed using the modified theoretical framework. The analysis is firstly presented at the individual/organisational level, and then at the national level (PESCTL).

Building on the previous chapter, Chapter 9, presents the conclusions of the study. It looks at the contribution of the study. It includes a discussion in relation to the research questions posed at the beginning. It then covers the theoretical framework and its possible role for future research. A discussion of its limitations and implications for further studies is presented.

1.16 Conclusion

This chapter sets out the reason for embarking on this research. In a country like Ethiopia, where there is a high level of poverty and low development, one of the

solutions to reduce this is the adoption and use of ICT. However, adoption is very low in Ethiopia, and this research attempts to shed light on the adoption and non-adoption factors.

The selected sector, the hotel and tour operator business, has both adopters and non-adopters. This chapter provides the overall structure of the study. It presents the development of the research idea and research process, the background, the identification of the problem and the research questions. It then discusses the research method, literature review, data collection, and data analysis techniques. Furthermore, it covers the limitation of the research, its significance, concluding with a presentation of the structure of the thesis. Next, Chapter 2 provides the research background including the country's socio-economic and overall ICT status.

Chapter 2 Research background and context

2.1 Introduction

The aim of this chapter is to set-out the research background and context. It starts with a short history of Ethiopia and a socio economic overview of the country. It then discusses the current political and human development in the country. It also presents an international and regional discourse on the role of ICT for development and poverty reduction. It then discusses the rationale for the study of the adoption of ICT in the hotel and tour operator business in Addis Ababa. It then goes on to present the role of SMBEs, followed by the history of the hotel sector in Addis Ababa. It further presents the history of telecommunications in Ethiopia and its current state, followed by ICT policies and regulatory framework. It concludes by presenting the diffusion of the Internet in Ethiopia.

2.2 Overview

In recent times Ethiopia has been known for famine and poverty, even though these are day-to-day realities for many Ethiopians, Ethiopia amounts to far more than this. It is one of the world's oldest civilizations. It has unique natural beauty with the Dalolo Depression (48 metres below sea level) (Global Volcanism Program, 2008) and Mount Ras Dashen (4533 metres above sea level). It is the oldest country in the world (Heinze, 2000) and it is the oldest independent country in Africa. Ethiopia has not been colonised except for five years of occupation by Italy during the Second World War.

Most of the country lies 1500 metres above sea level. The Rift Valley, the geological fault in East Africa, divides the country in two - the northern highlands and the southern lowlands. The climate also varies from very hot desert in the lowlands to very cold in the mountains. Ethiopia is located in Northeast Africa, between longitude 33˚ and 48˚ and latitude 3˚ and 15˚ N. The country was

previously known as Abyssinia. This name is derived from the name of the tribe, Habashat, that inhabited Ethiopia during the pre-Christian era (Zewde, 2002).

Emperor Menilek II founded Addis Ababa in 1886 and later in 1892 it became the capital city of Ethiopia (Zewde, 2002). Currently 2.7 million people live in the capital Addis Ababa. Addis Ababa has 10 sub-city administrations. Each administration is further divided into Kebles (local administration). Addis Ababa is home to the United Nations Economic Commission for Africa (UNECA) and the African Union (AU) organisations.

2.3 Social and economic overview

The Ethiopian economy is mainly based on agriculture; it accounts for 47% of GDP and 85% of total employment in the country. The major agricultural exports are: coffee, leather, hides and skins, oilseeds, pulses and, recently, khat[1] is another export to the neighbouring countries of Djibouti, Somalia and Yemen. Industry accounts for 15% of GDP, while the service sector is responsible for 38% of GDP. The contribution of the ICT sector remains very small. According to the World Bank, the contribution of ICT to GDP is less than 2%.

According to Adam (2007), the problems faced by the country are extremely challenging. Some of the major challenges include increasing population growth, low level productivity, inadequate educational and work standards, unreliable rainfall and being land-locked, and these pose a huge challenge not comparable to anywhere else.

Various Ethiopian governments have implemented numerous economic systems in the country's long history to resolve these challenges. The two main economic systems employed by the last three governments are mixed and command economies. The mixed economy system was employed during the time of the

[1] A leafy plant chewed in countries like Ethiopia, Somalia, Djibouti and Yemen.

imperial and the current government, and the command economy by the military regime. In 1957, Ethiopia prepared a comprehensive socio-economic development plan. It was the first African country to prepare a five year socio-economic development plan; it resulted in the building of infrastructure such as highways, airports a sea port, and the generation of electricity (Kuris 2006). However, the government failed to bring any significant change to the socio-economic development of the country.

The command economy system run by the military government proved to be a complete failure. However, it implemented land reform, where the ownership of agricultural land was transferred from the landlords to the peasants. But that did not improve productivity or reduce poverty in the country. In addition, the nationalisation of factories, hotels and residential houses (individuals are allowed to own only one property, any other properties were nationalised), resulted in shortages of commodities and housing.

The incumbent government's main strategy document, A Plan for Accelerated and Sustained Development to End Poverty (PASDEP), was set to run for 5 years from 2005-2010. The main goal of the programme was to reduce poverty and stabilise the macroeconomic conditions of the country. To a large extent, poverty still remains the biggest problem the country faces, with many millions of Ethiopians reliant on international aid.

The Ethiopian economy has grown in recent years. However, the percentage of the population below the poverty line is 29.2%. Furthermore, the devaluation of the currency by 50% in one year, coupled with inflation running at the rate of 44.4% in 2008, 33.2% in 2011 and 24.1% in 2012, have had a direct impact on the purchasing ability on the majority of the population (IMF 2013). In general, inflation increases the price of goods and services and has a negative impact on ICT diffusion (Godwin Udo et al. 2008).

2.4 Demography

The first census was conducted in 1984 when the population was 42 million. Then in 1994, when the second census was conducted, there were about 49 million inhabitants excluding Eritreans (Eritrea was part of Ethiopia during the first census). The third census, conducted in 2007, showed the population to have grown to 77 million inhabitants. In 2012, the population was estimated to be about 91 million inhabitants, making the country the second most populous country in Africa after Nigeria. The 2007 census indicated that the population in the age range between 15 and 64 years (representing people of working age) was 52.9%. A substantial proportion of the population, 44.4%, was in the 0-14 year age group.

Also there are 80 different ethnic groups, the major ethnic groups are: Oromo (34.5%). Amhara (26.9%), Somali (6.2%), Tigraway (6.1%), Sidama (4%), Gurage (2.5%), Wolayta (2.3%), Hadiya (1.7%) and Afar (1.7%). The official language of Ethiopia is Amharic. But each federal administration uses its own local language. The religions practised in the country are Orthodox 43.5%, Muslim 33.9%, Protestant 18.6%, traditional 2.6%, Catholic 0.7%, and other 0.7% (CSA 2007).

The number of education establishments has increased in the country. For example, the government has increased tertiary education from two to 33 universities. However, the country has a low level of literacy, only 42.7% of the population is literate. In addition, there are clear gender disparities, 82% of women aged 15 and over are illiterate, compared to 58% of men (UNESCO 2011). ITU has been monitoring the gender gap on the use of ICT since 2007. According to ITU the gender gap in the use of the Internet in the developing countries is 16%. The Internet access gender gap has a close relationship with income and level of education (Deen-Swarray et al. 2013).

2.5 Human development

Ethiopia ranked 174 out of 187 countries and territories in the United Nations Development Programme (UNDP) 2012 Human Development Index (HDI) measurement (UNDP 2011). HDI is a summary measurement of development in three basic dimensions: a long and healthy life, access to knowledge, and a decent standard of living. Long and healthy life is measured by life expectancy. Access to knowledge is measured by two means: the first is the mean years of adult education received in a life time by people aged 25 years and older, and the second is expected years of schooling that children of school-entrance age can expect to receive if prevailing patterns of age-specific enrolment rates stay the same throughout the child's life. A decent standard of living is measured by Gross National Income (GNI) per capita expressed in constant 2005 PPP$[2].

The 2012 UNDP report indicates that life expectancy at birth in Ethiopia is 59.3 years, while expected years of schooling are 8.5 years, the mean years of schooling are 1.5 years and the GNI per capita was 971. The above data provide an HDI value of 0.363 for Ethiopia. The HDI for Ethiopia is below that of the average of the low development group[3] (0.456) and it is below the average HDI of sub-Saharan countries (0.463).

Furthermore, the Inequality-adjusted HDI (IHDI), which is an index of actual human development, when subtracted from HDI (which is the index of potential human development) provides the loss of potential development because of inequality. The HDI value when discounted for inequality drops to 0.247 from 0.363 in 2011, a loss of 31.9% due to inequality in the distribution of the dimensions index. These indexes indicate that Ethiopia is a country with a low

[2] Gross National Income (GNI) per capita based on Purchasing Power Parity (PPP) is GNI converted to international dollars using purchasing power parity rates. An international dollar has the same purchasing power per capita based on purchasing power over GNI as a US dollar had in 2005 in the United States.
[3] Low development group are countries with HDI scores lower than 0.50

level of life expectancy, a low standard of living and the population is faced with a low level of access to education.

2.6 Political overview

In the last century, Ethiopia has seen through almost all forms of government, a kingdom during the reign of King Haile Selassie, and five years of colonial government by fascist Italy during the Second World War. The military government, that came to power by overthrowing the King, formed a communist administration nationalising all factories, hotels and housing. At the end of its era, as a result of the collapse of communism in Russia, and other factors such as the acute economic problem, the government relaxed economic management and started a mixed economy, by allowing private investment in some sectors, for example in the hotel sector; individuals were allowed to build and own hotels.

The incumbent government toppled the military government by force forming a transitional government. Later the government formed a federal administration based on ethnic grounds. Although elections were held every five years, the current government controls all political spheres in the country. The election in 2005 was the most contested election in the country, but following a protest by the opposition, most of the elected opposition members who won parliamentary seats were imprisoned and about 200 individuals lost their lives. In the May 2010 parliamentary election, the government won 99.6% of parliamentary seats.

There are many political parties in the country, and a challenge remains for the country to have a democratic election where opposition parties are given an equal chance (Crisis Group 2012). Lack of free press and Internet access, where using a Voice over Internet Protocol (VoIP) (services like Skype)[4] system is a criminal offence, greatly restricts the political sphere in the country. The country lacks truly

[4] Ethiopian government proclamation on Telecom fraud offence, proclamation no 761/2012

independent democratic institutions, such as an electoral commission and the judiciary.

2.7 International and regional discourse on the role of ICT for development and poverty reduction

International and regional organisations have identified the role of ICTs for development and poverty reduction. The UN recognises this and passed Resolution 56/258. The core of this resolution is stated as follows:

> *"Recognising that information and communication technologies are among the critical determinants for creating a global knowledge-based economy, accelerating growth, raising competitiveness, promoting sustainable development, eradicating poverty and facilitating the effective integration of all countries into the global economy",*
>
> UN General Assembly Resolution 56/258, 2001

Furthermore, the United Nations General Assembly endorsed WSIS on 21 December 2001 with Resolution 56/183. One of the WSIS's declarations of principles is stated as:

> *"to build a people-centred, inclusive and development-oriented Information Society, where everyone can create, access, utilize and share information and knowledge, enabling individuals, communities and peoples to achieve their full potential in promoting their sustainable development and improving their quality of life, premised on the purposes and principles of the Charter of the United Nations and respecting fully and upholding the Universal Declaration of Human Rights." (ITU 2003).*

Furthermore, WSIS identified ICT as important in meeting the Millennium Development Goals (MDG), which have the aim of halving poverty by 2015. It particularly identified the potential of ICT to generate employment in the developing world (UN 2001). It also identified ICT as a tool for increasing human resource capacity, particularly in the developing world.

One of the main aims of WSIS was to bridge the digital divide between rich and poor countries, by spreading access to the Internet in developing countries. WSIS

conducted two summits, the first in 2003 in Geneva and the second in 2005 in Tunis. The Geneva summit was attended by delegates from 175 countries and adopted a declaration of principles. The declaration, among other common visions, reaffirms all human rights and fundamental freedoms, including the right to development, and identifies the challenge of harnessing the potential of ICT to promote the development goals of the millennium declaration. Furthermore, the Geneva summit put forward a plan of action aimed at having 50% of the world's population on line by 2015. However, it does not indicate how this might be achieved. The WSIS Tunis summit resulted in the establishment of the Internet Governance Forum. However, the summit did not resolve the issue of Internet governance. Internet governance is managed by a non-profit private organisation based in United State of America, the Internet Corporation for Assigned Names and Numbers (ICANN).

The African Union Heads of State recognise the challenges for Africa in creating employment and alleviating poverty. The Heads of State and Government of the African Union meeting at the 3rd Extraordinary Session on Employment and Poverty Alleviation in 2004 in Burkina Faso, was aware of the need to address the creation of employment and alleviation of poverty in a holistic way. There were concerns that half of the continent's population lives below the poverty line and more than 140 million working poor are unable to provide sustainable living for their families.

The African initiative, the New Partnership for Africa's Development (NEPAD), is an initiative set up by the African Union. It identified ICT as having the potential to reduce poverty and bring about sustainable growth and development for sub-Saharan Africa. It formed an e-Africa programme with the task of developing policies, strategies and programmes on a continent-wide basis (Nepad, 2009). One programme is to connect 20 African countries with a broadband network, with a view to providing further integration of the continent and facilitating more ICT use for development and poverty reduction.

Other initiatives include the Digital Task Force, started by the G8[5] in the early 1990s, and focusing on the coordination of policies on the governance of cyberspace. Later, after the Okinawa Summit, the Digital Opportunity Task Force (DOTForce), its focus changed to reversing the "the digital divide" between rich and poor countries. The change of focus comes about because of the criticism that it increases the global digital inequity between rich and poor countries, by the forces of anti-globalisation.

The first World Information Technology forum (WITFOR) was organised by the International Federation for Information Processing (IFIP) in Vilnius, Lithuania, 27-29 August 2003; participants from 68 countries met and formulated, among other things, the following Vilnius Declaration[6]:

- Bridging the digital divide
- Ensuring the freedom of expression, Article 19 of the Universal Declaration of Human Rights
- Reducing poverty
- Facilitating social integration
- Respecting linguistic and culture diversity
- Fostering the creation of public domains
- Supporting communities in fighting illiteracy
- Encouraging e-governance and e-democracy initiatives
- Improving the quality of life through effective health care systems
- Protecting the local and global environment for future generations

However, the forum did not state how the declaration could be achieved. All these initiatives, UN [Millennium Development Goals], WSIS, and The New Partnership for Africa's Development, acknowledge the high level of human suffering caused

[5] G8: The world's largest economies, excluding China and Brazil, include: France, Germany, Italy, Japan, United Kingdom, United States, Canada and Russia.
[6] Can be found at http://www.witfor.org/2003/witfor_vilnius_declaration.pdf

by lack of opportunity, basic rights, employment, education, health, and shelter. This is a manifestation of poverty in its many forms and it is argued by international organisations such as the UN, that ICT has a critical role to play in alleviating poverty in developing countries.

Previous studies have shown that there is a measurable impact of investment in telecommunications on development for Organisation for Economic Co-operation and Development (OECD) countries (Hardy, 1983, Norton, 1992, Roeller and Waverman, 2001). A study of the contribution of mobile communication to the GDP of developing countries shows a positive correlation (Sridhar and Sridhar, 2004); this study shows that a 10% increase in mobile communication penetration results in a 0.6 % increase in annual GDP. The stakes are very high for developing countries to use this technological vehicle to increase Foreign Direct Investment (FDI) and GDP

There is a great deal of evidence to show how the effect of a high level of investment in ICT facilitates development in developed countries (Batchelor et al., 2005, Souter, 2004). However, there is no convincing research to show that high investment in ICT results in a reduction of poverty. Heeks (2002) shows failures of various high levels of ICT investment in developing countries. Madon's (1997), in a study in Bangalore in India, shows that where ICT based businesses became a primary IT hub for India, they had very little impact on reduction of poverty and infrastructure development in the area. Many e-governance projects fail to fulfil their aims because they lack a holistic approach to the problem, ie the alleviation of poverty, which they try to solve (Anand and Parashar, 2006).

On the level of the individual adopter, ICT tools also need to be appropriate. If a person is illiterate then the use of a computer is out of the question, unless an appropriate user interface is used that is suitable for illiterate users. However, a mobile phone can be appropriate, as it can be used for verbal communication, and consideration needs to be given to issues of human capacity such as literacy

(Jain, 2003). ICTs diffusion in developing countries on a local and regional level requires multi-level and multi factor approaches for it to be used effectively (Harris, 2004). This is reiterated by Genus and Mohamad Nor (2007) emphasising the multidimensional approach in all areas of ICT, pro-poverty alleviation policies and infrastructure. The emphasis on policies has to be on the focus of alleviation of poverty rather than on building the latest ICT tools or bringing in new technology from the shelf, that works in developed countries, to fit in the development effort in developing countries.

2.8 The role of SMBEs for development and poverty reduction in Africa

According to the African Development Bank (ADB) (2005), SMEs account for 60% of the continent's output, 80% of employment, and they also create 80% of new jobs. The contribution of SMEs to providing employment can be harnessed using ICTs in developing countries where unemployment is very high.

The importance of small businesses is obvious in the developed countries and this is true for developing countries as well. SMEs generate approximately 50% of GDP in developed countries, and because of weak economies, SMEs are responsible for the generation of 10% to 16% of GDP in developing countries (Patricof and Sunderland, 2006).

The role of SMBEs in areas such as employment generation, growth and poverty reduction can be enhanced by an increase in availability of ICT. According to Lydon and Williams (2005), countries that have better ICT infrastructure attract higher average inflows of FDI. Inward FDI flows are positively related to both fixed and mobile telecommunications. A one percent increase in mobile communication penetration brings about an increase of FDI in the order of 0.5% to 0.6% as a proportion of the country's GDP (ibid). FDI brings spill-over benefits to the recipient country in three ways. One is transfer of skills, which increases the human capital of the recipient country, and the second is the tax revenue generated, which can

be reinvested to provide other similar infrastructure, this in turn brings about more inward FDI. The third is the employment generated because of inward FDI resulting in poverty reduction.

2.9 SMBEs and the use of ICT in Addis Ababa

The Ethio-German Micro and Small Enterprises Development Project organises a number of clusters in Addis Ababa. The aims of this Business Development Services (BDS) are to create jobs and reduce poverty (Kidane, 2005). Kidane has surveyed 7 clusters, consisting of 164 enterprises with 2835 employees in six sub-cities. Kidane has identified three major problems in these clusters. Firstly, lack of infrastructure (road, electricity, water, show rooms), secondly, lack of investment funds, and market. The third is lack of administration know-how. ICT has been mentioned once as a lack of a single telephone line in one cluster. The ICT requirement has been very minimal in the case of these clusters. Though the use of ICT in SMBEs is very limited, many researchers recognise the benefits. For example, Donner and Ecobari (2010) review the advantages of ICT on SMEs in developing countries, and conclude that it is beneficial because it increases productivity and trust, reduces costs and increases business contacts.

ICT is a tool for realising the benefit of e-commerce. E-commerce can provide an international value chain and increase market access and reach for developing countries. One of the main obstacles for SMBEs in developing countries is finding markets for their products. E-commerce, on the other hand, requires high investment and a high level of IT knowledge, both of which are lacking in developing countries. E-commerce can reduce poverty, however it is recommended to exercise caution against an over-optimistic view of its effect on developing countries (Molla and Heeks, 2007).

SMBEs are the main employers in cities. Unemployment in the urban areas of Ethiopia are prevalent, in particular in Addis Ababa, and other major cities. The

OECD (2007) estimated that unemployment in Addis Ababa was in the region of 40% . Most of the employed population works in Micro Business Enterprises with very low wages. According to ECSA (2006), the majority of the employed urban population (50.6%) works in what ECSA calls the “informal sector”; these are, for all intents and purposes, micro business enterprises, business that are operated by individuals with a headcount of less than 10. A survey for ECSA also found that these businesses are not registered, not covered by labour legislation, or included in work force protection measures. Government policies and networks do not support these businesses. They have no access to credit institutions or ICT, and their growth and economic activity is ignored or at worst discouraged.

2.10 Rationale for the study of the adoption of ICT

There is no clear way in which ICT can be utilised to bring about development and reduce poverty. The current development discourse for developing countries has two strands: the first, based on the neo classical development theory, is a free market economy with no or little government interference to realise economic development. Very little is known about how this theory can be implemented to help developing countries to enable them to develop their economy and reduce poverty. The second discourse is based on the New Institutional Economic (NIE), which emphasises the importance of institutions that govern and facilitate the behaviour of economic factors, and still rely on a free market to create efficiency and development.

The current research discourse on ICT indicates that at least four different emphases are expressed. The first is the emphasis on increasing GDP (Easterly 2006, Sachs 2005) using ICT to reduce poverty and increase development. The second emphasis is to use ICT’s ability to create empowerment (Unwin 2007) for the poor and the disadvantaged to pull themselves out of poverty. The third discourse emphasis is the ability of ICT to create a networked society (Castells 2010) to influence the political and social sphere for society to reduce poverty. The

fourth emphasis focuses on ICT's ability to create Gross National Happiness (GNH), (Heeks 2012). According to Heeks, ICT can create a condition for happiness, for example by creating job opportunities for the jobless (ibid).

However, Avgerou (2003) argues that the link stated by many international organisations between ICT and economic growth in developing countries, is based on a narrow economic theory without considering its controversies. Furthermore, she argues that the interventions of international organisations are based on incorrect perceptions, and their recommendations hinder rather than help developing countries. She goes on to argue that, generally high level of ICTs adoption is a result of development, and adoption of ICT by itself will not necessarily result in economic development, and is not an economic theory responsible for economic growth.

Though the criticism of Avgerou on the role of ICT for economic growth in developing countries states that it does not follow well-established economic development theories, and is only based on a narrow economic assumption, it is well placed. However, recent studies show that the role of ICT on economic activity in developing countries has a positive relationship between ICT diffusion and better access to financial services for the poor and the disadvantaged. For example, M-Pesa in Kenya and Tanzania provides banking facilities for millions of poor and disadvantaged people, who live in rural parts of the country, with no bank accounts (Wanjohi Kabukuru 2012, Nevin 2012).

In addition, the role of ICT in empowering individuals to have a voice on matters that affect them has grown. For example, the extent of the role of social media on the Arab uprising has been debated. On the one hand, the role was stated as an instigator, on the other hand, it was taken to be just a tool. However, in both cases, social media were demonstrated to play a significant role in the social and political sphere in the Arab world (Kaplan & Haenlein 2010, Shirky 2011).

However, ICT has to be diffused in society to have the desired effects such as generating development, reducing poverty, empowering the poor and the disadvantaged, creating a networked society or generating a high level of GNH. It is clear that ICT has a significant role in development and poverty reduction in developing countries. ICT needs to be diffused in society to have the desired effect. However, ICT is not diffused in developing countries. The digital divide is an indicator of how developing countries are lagging behind developed countries in terms of ICT adoption. However in some developing countries ICT diffusion has increased significantly as a result of favourable policies implemented by their governments. Ethiopia is lagging behind in almost all ICT diffusion measures (ITU 2013).

2.11 The main focus of the research area

At the beginning of the research project, the focus was to find the factors that affect the diffusion of ICT in Addis Ababa. The research project set out the criteria to find the sector(s) that is/are appropriate for the study. The plan was to have both adopters and non-adopters of ICT in the selected sector(s). This enables to shed light on both adoption facilitators/resistance factors that influence the adoption of ICT in the selected sector. Many sectors were considered, such as: manufacturing, retail, hotels, tourism, and education.

To determine the sector(s) that would be used as a unit of analysis for the study the following criteria were followed:

- The adoption and use of ICT in the sector(s), particularly mobile phones, computers, Internet and wireless systems in their establishments;
- To get an insight into the factors that create resistance to the adoption of ICT, the selected sector(s) also needed to include those that do not adopt ICT.
- Use of applications that support business operations such as: business management software, accounting and payroll software;
- Availability, access and willingness of potential participants to provide data.

The selected sectors were looked at closely to decide which sector(s) should be selected for the research, based on the above criteria. Furthermore, the researcher worked for more than 10 years as an IT manager in the School of Hospitality and Tourism at the University of West London. During this period, the researcher gained valuable experience in which ICT tools are used in hotel and tourism businesses. The researcher has the knowledge on current available hospitality software, how these systems are implemented and used in the sector. In addition, the researcher has access to expert advice and opinion on the hotel and tour operator business sector.

Moreover, there are many hotels in Addis Ababa, so there was a good chance that a sufficient number of participants would be secured for collection of the data.
In addition, some hotels adopt ICT and most small hotels are non-adopters of ICT; this provided the right mix of research participants, where it was possible to collect data to find the adoption and non-adoption factors to answer the research questions, whereas other sectors did not provide this mix of adopters and non-adopters of ICT.

In all research, data collection requires time and money, but it is more expensive in developing countries (Casley & Lury 1987). The hotel and tour operator business could provide access to data collection within reasonable time and cost. In many cases, especially near airports, hotels are found in clusters and owners/managers are available in their businesses most of the time. This helps to avoid repeat visits for data collection and makes it cheaper for data collection.
After a close investigation of all the above sectors, and during a preliminary field visit to Addis Ababa, the hotel and tour operator business was selected to be the unit of analysis for the following main reasons.

- The hotel sector uses ICT more than other sectors; this is driven by customer demand as a result of network externalities;

- The government requires hoteliers to use a particular software for their hotel operation for tax purposes;
- In many cases the key people in the hotel sector volunteered to participate in an interview or survey.
- The access to expert knowledge in the school, including advice on the characteristics of the hotel and tour operator business, made the selection of the hotel sector appropriate for the study.

2.12 The Hotel sector and associated businesses in Ethiopia

2.12.1 History

Empress Taytu Betul, the wife of Emperor Menilek II, established the first hotel in Addis Ababa in 1907 (Zewde 2002). Etege Hotel, named after the title of the empress, was described by locals as the house of strangers. Emperor Menilek II was keen to introduce the hotel business to the country; he regularly brought his ministers to the hotel.

The hotel sector continued to expand during the period of Emperor Hayla-Sellase. Development of hotels expanded to historical locations in the country. This expansion came to an abrupt end when the military government seized power in a coup d'état. The military regime established a socialist political system. It nationalised private enterprises, and all major hotels were nationalised by the military government and run by the Ethiopian Hotel and Tourism Corporation. During this period, continued general political instability, tension, and civil war created a negative impact on tourism in the country. As a result of this and stereotypical government animosity towards capitalist countries, tourist numbers decrease drastically and this resulted in very low income for the hotel sector (Sisay, 2009).

In its final years of power, the military government introduced a policy of a mixed economy, allowing private investors to participate in various sectors of the

economy. Local investors started building new hotels; in the first year of the introduction of the mixed economy plan, there were forty hotels under construction.

The incumbent government follows a free market economic plan. The investment in the building of hotels has grown considerably compared to the previous regime. The economic contribution is growing proportionally as well as the generation of employment for the locals. The hotel sector is inherently a labour intensive economy. It provides employment for thousands of people in the city. According to Sisay (2009), the number of staff employed in government hotels in the whole country was about 5000. However, this number does not include all those employed by private hoteliers. Furthermore, Sisay also states that it is difficult to get employment data in the sector. The actual number of people employed directly and indirectly is much higher than 5000.

2.12.2 The role of hotel sector for development and poverty reduction

The role of the hotel sector can be summarised in three areas, namely: employment generation, contribution to GDP and generation of foreign currency earnings. The hotel sector by its very nature is labour intensive, hence it creates many employment opportunities. However, in many cases, wages are very low and working conditions may not be favourable. The hotel sector, in spite of all this, provides job opportunities and enables many to pull themselves out of poverty.

The service sector accounts for 37% of GDP in Ethiopia. According to the Ethiopian Economic Association (ECA), the service sector, which comprises trade, hotels and restaurants, transport and communication, banking and insurance, public administration and defence, education, health, domestic and other services, contributes the second largest amount to GDP following the agriculture sector. The subsector of trade, hotels and restaurants is responsible for 37.1% of the 37% of

the service sector. The average growth of this subsector was 6.1% in the three years to 2006.

The hotel sector generates foreign currency earnings for the government. According to Sisay (2009), the total amount of foreign currency earned from the tourism sector in 2005 was 134,453,529 USD. This includes the earnings generated by hotels and associated businesses.

2.13 Telecommunication in Ethiopia

2.13.1 History

The Ethiopian Telecommunications Corporation (ETC) is the oldest public telecommunications operator in Africa. Telecommunications services started in Ethiopia in 1894. Much of the telecommunications infrastructure was destroyed during the 5 year Italian occupation. In 1952, the Imperial Board of Telecommunication of Ethiopia (IBTE) was established by proclamation number 131/52. IBTE was responsible for delivery of services and management of the expansion of telecommunications services in Ethiopia. Although it is owned by the government, it had autonomy in the administration and finance of the organisation. IBTE was reorganised by the Derg[7] in 1975 and its name was changed to Ethiopian Telecommunication Services. In 1981 it was renamed again as the Ethiopian Telecommunication Authority (ETA). In 1996 it was reorganised again and became the ETC by proclamation no 49/1996 (ETA 2004).

ETC was the national telecommunications operator and regulator until 1996. The Ethiopian government established the Ethiopian Telecommunication Agency (ETA), the telecommunications regulatory body, in 1996 by proclamation number 49/1996 (ETA 2004). In the same year, the Council of Ministers formed the ETC

[7] The name given to the military junta that overthrew King Hayla-Sellase's government and took power and ruled Ethiopia between 1974 to 1991.

by regulation no. 10/1996, as the sole telecommunications operator in the country under public ownership.

2.13.2 State of information and communication technology in Ethiopia

Telecommunications services are growing world-wide, and at the end of 2011, there were 6 billion mobile phone subscribers, 1 billion mobile Internet users, 590 million fixed (wired) broadband subscribers, and 2.3 billion people were on line. The growth of mobile phone subscriptions was driven by developing countries, which account for 80% of the 660 million new mobile subscribers (ITU 2012). The growth of ICT is continuing, according to ITU; by the end of 2013, 40% of the world's population was to be online. The number of mobile broadband customers is now close to 2 billion. The prices of fixed-broadband have dropped by 82% in the last four years (ITU 2013).

The disparities between the developed and the developing countries remain high on mobile broadband subscriptions; the penetration levels were 51% and 8% respectively at the end of 2011. Fixed (wired) broadband subscription is slowing in the developed world (5%), whereas it is growing at a higher level in developing countries (18%). Internet growth doubled in developing countries between 2007 and 2011, but only a quarter of the population had access by the end of 2011. The latest report from ITU indicated that ICT uptake remains limited in the world's least connected countries (LCCs) – a group of 39 countries with a low level of ICT development.

The table below shows the state of ICT development in Ethiopia between 2011 and 2012.

	2011	2012
Fixed-telephone subscriptions per 100 inhabitants	1	0.9
Mobile-cellular subscriptions per 100 inhabitants	16.7	23.7
international Internet bandwidth per Internet user	6974	5065
Percentage of households with a computer	1.8	2.1
Percentage of households with Internet access	1.5	1.9
Percentage of individuals using Internet	1.1	1.5
Fixed (wired)-broadband subscriptions per 100 inhabitants	0	0
Wireless-broadband subscriptions per 100 inhabitants	0.3	0.4
Secondary gross enrolment ratio	37.6	37.6
Tertiary gross enrolment ratio	7.6	7.6
Adult literacy rate (percentage of total population)	39	39

Table 2-1 ICT development index values for Ethiopia

The latest data from ITU (ibid) indicate that there are improvements in the uptake of mobile phones and a slight increase in the percentage of ownership of computers. However, other IDI indexes show little or no improvement, and in some cases a decrease has been observed. For example, fixed telephone and Internet bandwidth per Internet user has decreased. The overall result of IDI compared to other countries decreased from 150 to 151, indicating that ICT development in Ethiopia is lagging behind other countries.

The growth of mobile phones and the Internet in developing countries has been remarkable, but if one looks at the figures for countries like Ethiopia in sub-Saharan countries, the result is disappointing. At the end of 2011, mobile phone users as a proportion of the population was 64.8% in Kenya, 55.5% in Tanzania, whereas in Ethiopia it was 16.7%. A high proportion of individuals living in Kenya (28%) and Tanzania (12%) had access to the Internet, but in Ethiopia, it was only 1.1%. The telecommunications sector has been liberalised in most African countries, including Kenya and Tanzania, but Ethiopia, along with three countries in Africa; Comoros, Djibouti and Eritrea, maintains restrictions on FDI in the telecommunications sector.

	% of individuals using the Internet			Fixed telephone subscribers per hundred inhabitants			Mobile phone subscriptions per hundred inhabitants			Percentage of households with computer		
	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012
Ethiopia	0.8	1.1	1.5	1.1	1	0.9	8.3	16.7	23.7	1.4	1.8	2.1
Kenya	14	28	32.1	0.9	0.7	0.6	61.6	64.8	71.9	5.6	7.8	8.8
Tanzania	11	12	13.1	0.4	0.3	0.4	46.8	55.5	57.1	3.6	4	4.4

Source: ITU World telecommunication/ICT indicators database

Table 2-2: Comparison of ICT indicators for selected sub-Saharan countries

The Ethiopian telecommunications authority has been struggling to meet the demand for telephone lines for many years. Many thousands of users are still on the waiting list for their first telephone landline service. The data shown below in Figure 2-1, indicate that in 2004 the waiting list was at its highest at 156,963, but was reduced to 13,579 by 2007. It then started to increase again and reached 18,548 in 2009. The ITU country report of 2002 indicated that the average waiting time for securing a landline was 8 years (ITU, 2002). However, at the same time, the switching capacity, or the number of total telephone lines, was 550,000, of which only 340,000 lines (61%) were used. At the same time, 220,000 lines were idle, while many potential customers were waiting for 8 years.

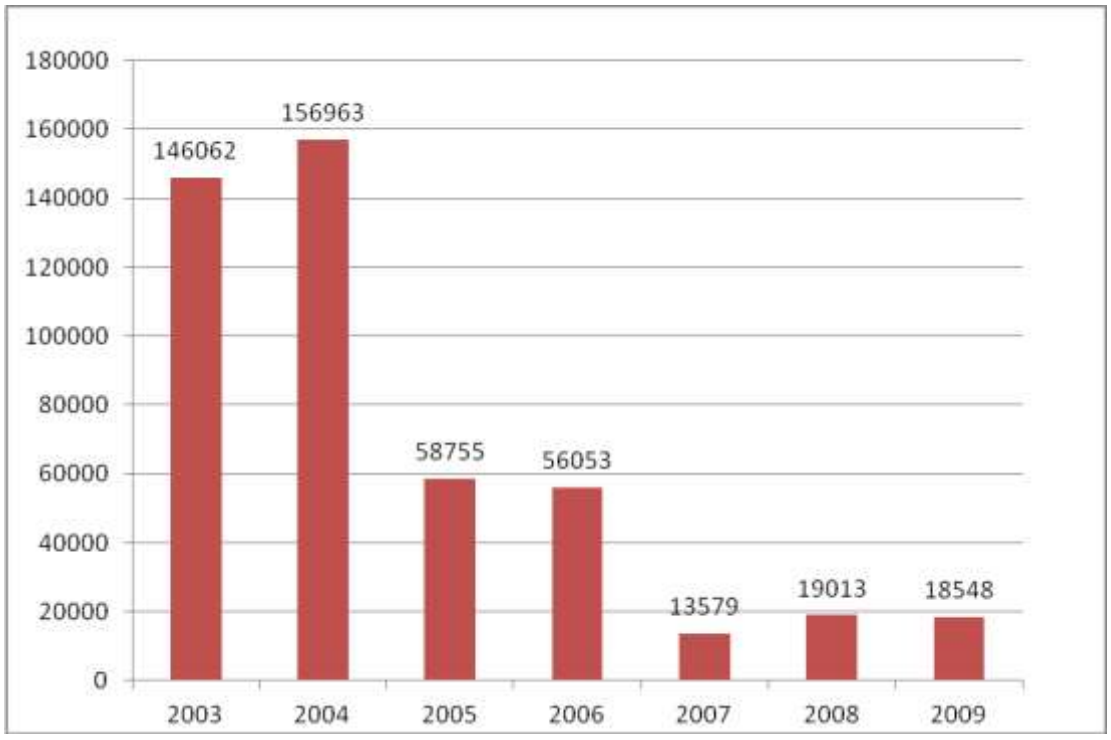


Figure 2-1: Waiting list numbers for landline

Source: Ethiopian Telecommunication Authority Statistical Bulletin 2008/2009

The ICT Development Index (IDI) shows the ranking for Ethiopia compared to other countries. The IDI is measured using a three-stage model. They are: ICT readiness (infrastructure and access), ICT capability (skills) and ICT use. The access sub-index measures fixed-telephone subscriptions, mobile cellular telephone subscriptions, international Internet bandwidth per Internet user, percentage of households with computers, and percentage of households with Internet access. The second use sub-index measures three usage indicators. They are individuals using the Internet, fixed (wired) broadband subscriptions, and wireless broadband subscriptions. The skills sub-index, in the absence of data on ICT skills, measures three proxy indicators and is therefore given less weight in the computation of the IDI. They are: adult literacy, gross secondary enrolment, and gross tertiary enrolment.

The data as shown below in Table 2-3 indicate that the ranking for Ethiopia remains the same at 151 out of 157 countries for 2010 and 2011. The latest data on the IDI ranking for Ethiopia show a decrease from 150 to 151 during 2012. The IDI indicator has shown a slight improvement from 1.22 to 1.24 between 2011 and 2012. The average IDI value change between 2011 and 2012 is 0.2, whereas in the case of Ethiopia it is only 0.02. This indicates that Ethiopia's ICT development is lagging behind other countries. The data from ITU indicate the low-level penetration of ICT in the country.

Economy	Rank 2012	IDI 2012	Rank 2011	IDI 2011	Rank 2010	IDI 2010
Uganda	130	1.81	130	1.72	136	1.53
Rwanda	141	1.66	143	1.54	140	1.5
Zambia	132	1.77	137	1.64	137	1.53
Mauritania	133	1.76	133	1.7	138	1.53
Cameroon	136	1.72	136	1.66	135	1.54
Tanzania	142	1.65	141	1.57	139	1.52
Congo (Rep. of the)	147	1.31	146	1.3	133	1.55
Benin	143	1.6	142	1.57	141	1.49
Madagascar	149	1.28	147	1.28	142	1.41
Malawi	145	1.43	145	1.41	143	1.37
Mali	144	1.54	144	1.43	147	1.24
Congo (Dem. Rep.)	147	1.31	146	1.3	149	1.18
Mozambique	148	1.31	149	1.26	145	1.26
Guinea	152	1.23	151	1.2	146	1.25
Liberia	146	1.39	148	1.27	148	1.2
Ethiopia	151	1.24	150	1.22	150	1.09
Burkina Faso	154	1.18	154	1.11	152	1.06
Eritrea	153	1.2	153	1.15	151	1.08
Central African Rep.	156	1.00	155	1.00	153	0.96
Chad	155	1.01	156	0.94	155	0.85
Niger	157	0.99	157	0.93	154	0.88

Source: ITU

Table 2-3: ICT Development Index; Source: ITU (2013)

2.13.3 The cost and affordability of ICTs

The ICT Price Basket (IPB) provides the cost and affordability of ICT services across countries and regions. It is the benchmark comparison measure of the cost of a fixed line telephone, mobile phone, mobile broadband and fixed broadband. The price comparisons are given as a percentage of the average monthly Gross National Income (GNI) per capita. The IPB data given below in Table 2-4 show that in Ethiopia there was a big reduction in price for fixed broadband from 90.6% to 85% of the average monthly GNI per capita. However, it is still the most expensive compared to Kenya (57.4%) and Tanzania (70.8%). The cost for using a mobile phone decreased in both Kenya (from 17.8% to 6.8%) and Tanzania (from 37.1% to 22.9%), whereas it increased in Ethiopia from 12.6% to 13% of the average monthly GNI per capita.

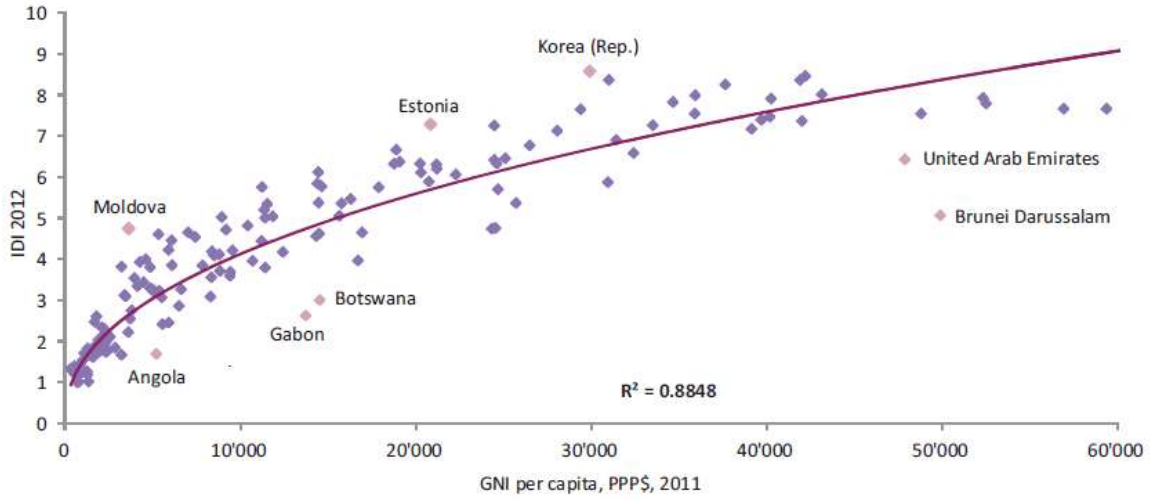
Countries	IPB			Mobile broadband post-paid as % of GNI per Capita (500MB)	Fixed telephone sub-basket as a % of GNI per Capita			Mobile phone sub-basket as a % of GNI per capita			Fixed broadband sub-basket as a % of GNI per capita			GNI per capita, USD, 2011 or latest available year
	2010	2011	2012	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012	
Ethiopia	38.5	33.8	28.4	28.6	3	3.4	2.9	12.6	13	11.4	906	85	71	400
Kenya	32.3	28.6	24.4	8.2	21.5	21.5	18.5	17.8	6.8	5.5	57.6	57.4	49.3	820
Tanzania	44.4	39.7	26.5	11.3	25.5	25.5	19.9	37.1	22.9	17.2	70.8	70.8	42.4	540

Table 2-4: ICT Prices comparisons table for Ethiopia, Kenya, and Tanzania

Source: ITU. GNI and PPP$ values are based on World Bank Data

In four years, the price of broadband in the world decreased by 82%. However, this reduction has not translated to many developing countries. For example, the reduction in fixed broadband price was 8.1%,in Kenya, while in Tanzania it was reduced by 28.4%, and in Ethiopia it was reduced by 14%. However, the price is still very expensive: in Ethiopia it is 71%, in Kenya it is 49.3% and in Tanzania it is 42.4% of GNI per capita. This indicates that the price in Ethiopia is very expensive compared to Kenya and Tanzania. The major reason for high prices of telecom services in Ethiopia is to increase government revenue, and prices are kept artificially high by the monopoly operator (Freedom House 2013).

The data from ITU indicate that there is a strong link between income and ICT development. However, because of variation of national policies, some countries have high IDI values compared to their GNI level, for example South Korea and Estonia. On the other hand, countries with relatively high income levels but comparatively lower levels of IDI, countries such as Gabon and Botswana, have low IDI.



Source: ITU, MIS 2013 report, (ITU 2013, p .43)

Chart 2-1 IDI and GNI per capita

There is a relationship between the prices of ICT services and the uptake of ICTs. Countries where ICTs prices are not affordable tend to have a low level of

penetration of ICT tools. ITU advises countries with high levels of ICT prices and low levels of ICT penetration to review their ICT pricing policies and adjust their pricing to make it affordable (ITU 2013).

2.13.4 Available content and applications

The government of Ethiopia has routinely filtered critical and oppositional political website contents. The latest test conducted by the Open Net Initiatives (ONI) in September 2012 found that online political and news content continues to be blocked (Poetrato 2012). Furthermore, Birara (2012) argues that the government's purpose for restricting ICT in the country is for the sole reason of control.

In Ethiopia, the government does not tolerate expression of alternative views online or offline. In July 2012, Eskinder Nega was jailed for 18 years on charges of attempting to incite violence through his blog posts (Poetrato 2012). Furthermore, the Internet anonymizer software project, the Tor[8] network, reported that Ethiopian telecommunications had started deep pocket inspection to block access to the Tor network. Furthermore, tests conducted by ONI verify that critical political content is filtered through non-transparent means. The Ethiopian government controls what information is available on the Internet in the country.

2.13.5 ICT policies

Batchelor et al (2005) argue governments have to focus on building ICT infrastructure. The way forward is to minimise the effects of barriers. Batchelor recommends two factors that enable the use of the full potential of ICTs to reduce poverty. Firstly, the building of capacity of ICTs by mainly government and other stakeholders needs to be accelerated. The second factor is the policy of ICTs' content should focus on providing health, education and creating favourable

[8] Tor: The onion router, a project started to protect the US government communication network, today, it is used every day for a wide variety of purposes by normal people, the military, journalists, law enforcement officers, activists, and many others.

economic conditions. However, according to Chisenga (1999), in sub-Saharan Africa, governments ignore ICT or deliberately limit availability of information.

The Ethiopian government had a five-year plan, PASDEP, for the period 2005/6-2009/10. It stipulated that ICT plays a critical role in promoting growth and reducing poverty and this strategy identified five elements:

- Promoting human resource development in the field of ICT;
- Mainstreaming the use of ICT in all sectors of the economy, in the administration of government, and in the education system;
- Developing the necessary telecommunications infrastructure;
- Promoting research and development through ICT;
- Creating the enabling legal and regulatory framework.

However, the strategy document failed to identify how these five elements of ICT strategy could be achieved. In the last decade, there has been a reduction in price and increase in availability of hardware and software. The role of ICT and its impact on poverty and development resonate internationally and nationally; however the diffusion of ICT in Ethiopia remains very low.

In recent times, the government of Ethiopia has kept close control of the use of ICT in the country. After the 2005 disputed election and its aftermath, ETC stopped text services throughout the country. Though the government did not provide any explanation for this service suspension, it is assumed that the opposition used texting before the 2005-disputed election (Blunt 2007). The texting service resumed in 2007 after 2 years of total absence. The restriction in use of the Internet continued in 2012; Skype and similar voice over IP services became illegal and it became a crime punishable by 15 years of imprisonment (Moskvitch 2012). The recent report by the Committee to Protect Journalists (CPJ) indicates that censorship of information flow in Ethiopia is on the increase; news websites

and blogs are increasingly banned by new pervasive filtering systems in the country.

2.13.6 Telecommunications sector regulation

The telecommunications industry has gone through unprecedented changes because of new technology innovations in the world in the last decade. Many state owned telecommunications operators were privatised. In many countries, market-based telecommunications services became a reality. For this to work, it is essential to have a national telecommunications regulator. The 1997 World Trade Organisation (WTO) agreement on basic telecommunications services formally established the need for national telecommunications regulatory bodies. Some of the main reasons cited by many and iterated by ITU (2000) and WTO are:

- Regulators must authorise and license new operators;
- Remove barriers to telecommunications markets for new operators;
- Oversee interconnection of new entrants with incumbent operators;
- Ensure that competitive markets do not fail to serve high cost areas or low-income subscribers;
- Promote competition in the sector with clear transparent policies for equitable access.

The importance of regulator independence, with a legal mandate and functional autonomy to support private investment and competition, is paramount to the success of the telecommunications sector (Stern & Trillas 2003). Samarajiva (2000) argues that, in developing countries, the government has to ensure that the regulatory framework should include provision of telecommunications services that are not profitable as a condition of participating in the market.

Ethiopia is not yet a member of WTO, but the accession process has been ongoing for the last seven years. The two main obstacles are the disagreement between the government and WTO on the market structure of the

telecommunications and banking sectors in the country. WTO had requested the government to liberalise the telecommunications and banking sectors. However, the Ethiopian government has resisted liberalising these two sectors so far. The Foreign Minister of Ethiopia, Dr Teodros Adhanom, told Reuters, “We are not ready” when asked if Ethiopia would open its telecommunications and banking sectors (Laugh & Maasho 2013). The recent report by Reuters indicates that the government’s main reason for not liberalising the telecommunications sector is that the 6 billion birr ($321 million dollars) it generate each year is being spent on railway projects (Maasho 2013).

The Ethiopian government established the ETA, by proclamation number 49/1996, to regulate the telecommunications sector. At the same time, ETC, which was responsible for both regulation and the supply of telecommunications services, became the national telecommunications operator in the country. Furthermore, the organisation was again restructured and renamed Ethio Telecom.

On its website Ethio Telecom http://www.ethiotelecom.et/ stipulates that its objectives are to promote the development of high quality, efficient, reliable and affordable telecommunications services in the country. Furthermore, it states the core powers and duties of the organisation as:

- Ensuring telecom services are operated in a manner that best serve and contribute to the country's economic and social development;
- Ensuring that telecom services conform to the specified standards of quality;
- Authorising and supervising the use of frequencies allocated to Ethiopia;
- Specifying technical standards and procedures for the provision of telecom services;
- Regulating tariffs related to basic telecom services;
- Regulating types of telecom equipment, which may be connected to a telecom system;

- Licensing and supervising operators of telecom services

ETA regulates the state owned monopoly telecommunications operator, resellers of Internet and mobile services, and small equipment suppliers. However, its objectives are to promote the development of high quality, efficient, reliable, and affordable telecommunications services in the country. There is no clear idea on how ETA can achieve these objectives with a monopoly telecom operator. Furthermore, the main reasons for having a telecommunications regulator are to foster competition, to facilitate market entry, and regulate universal access. There is no competition in the telecommunications sector, and in this setting, ETA's effectiveness is limited as a regulatory body.

2.14 The "digital divide"

International organisations such as the UN, WSIS, and ITU have identified the importance of ICT for development and poverty reduction, and have highlighted the importance of reducing the digital divide between the developed and developing countries. One such attempt, initiated by the G8, is the Digital Task Force. The Digital Task Force started focusing on the coordination of policies on the governance of cyberspace in the early 1990s. Later, after the Okinawa Summit, the DOTForce, the focus changed to reversing the "the digital divide" between rich and poor countries. The change of focus came about because of the criticism of the G8 by the anti-globalisation forces claiming that it increased global inequality.

2.14.1 What is the "digital divide"?

Many researchers define the "Digital Divide" as focusing on the various differences of access, availability, affordability and other measures. For example, Wilson (1987) defined it as the 'haves' and 'have nots', whereas Doctor (1991) put forward another definition of the digital divide as 'information poor and information rich'.

ITU has been measuring ICT development since 2008; the latest 2013 report measures ICT development using eleven indexes grouped into three main areas. The IDI provides one benchmark that is used to measure the development of ICT across countries. According to ITU (2013 , p 17) there are four main objectives of IDI:

> *“ the level and evaluation overtime of ICT developments in countries and relative to other countries;*
>
> *Progress in ICT development in both developed and developing countries: the index should be global and reflect changes taking place in countries at different levels of ICT development;*
>
> *The digital divide, i.e. differences between countries with different levels of ICT development;*
>
> *The development potential of ICTs or the extent to which countries can make use of ICTs to enhance growth and development, based on available capabilities and skills.”*

IDI measures the digital divide using three sub-indexes:

1. ICT readiness (infrastructure, access)
2. ICT use (intensity)
3. ICT capability (skills)

1. ICT readiness (infrastructure, access) sub-index measures five indexes
    a. Fixed-telephone subscription
    b. Mobile- telephone subscription
    c. International bandwidth per Internet user
    d. Percentage of households with a computer
    e. Percentage of households with Internet access
2. ICT use (intensity) sub-index measures three ICT intensity and usage indicators
    a. Individuals using the Internet
    b. Fixed (wired) broadband subscriptions

    c. Wireless broadband subscriptions
3. Skills sub-index measures ICT capability of skills using three proxy indicators
    a. Adult literacy
    b. Gross secondary enrolment
    c. Gross tertiary enrolment

Other researchers identified other aspects of digital divide factors, for example Norris (2001) argues that emphasis should be given to the political and economic aspects of the digital divide. She went on to identify three hierarchical levels: the macro-level: the technological and economic resources available and their distribution; the meso-level: the role of political institutions; and the micro-level: the resources and motivations of individuals. Campaine (2001) supported Norris's argument and further emphasised the critical role played by technological and political factors in the digital divide. Furthermore, he argued that the various gaps that exist in societies are partly the reflection of economic status.

On the other hand Mun-cho and Jong-Kil (2001) identified three major stages of the digital divide: information accessibility, information utilisation and information receptiveness. The first stage, information accessibility, is the limitation imposed by various factors, mainly economic factors, that determine users' ability to have access to the digital opportunity. The second stage, information utilization, is the ability of the user to obtain and create benefit in using the information. The third, information receptiveness, is the users' ability to use the information to enrich the quality of life for themselves and others.

The three digital divides identified by Mun-cho and Jong-kil (2001) are important, and at least indicate the degree of the digital divide, but it is not readily possible to benchmark and measure it like IDI. However, the identified three stages show the impact of ICT on creating value and development for individuals. The IDI provides a measurement of the available infrastructure and percentage of individuals who have access to ICT. However, IDI does not indicate the availability of information and its effective use for creating added value for the individual and society.

Combining the two identified measures of the digital divides, as shown below in Figure 2-2, shows the extent of the digital divide between the developed and developing countries.

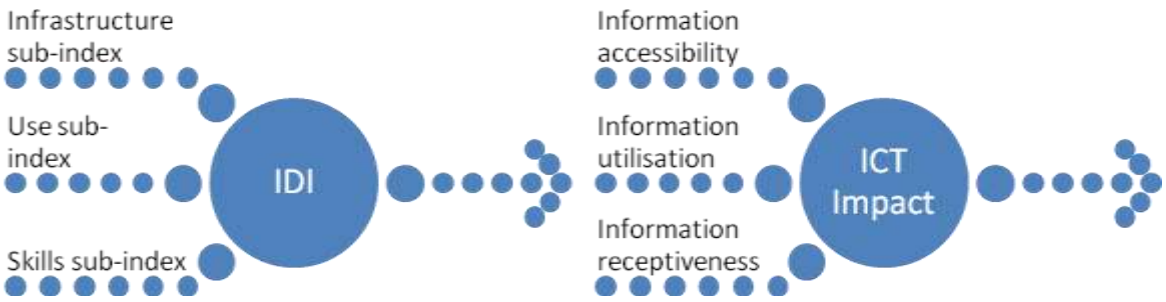


Figure 2-2 Measure of the digital divide

2.14.2 Current state of the "digital divide"

One of the objectives of IDI is to measure the digital divide, and it can be used to measure the ICT development gap between countries, or groups of countries, for example, the digital divide between developed and developing countries. Moreover, it also indicates whether the gap is increasing or decreasing. It can also be used to compare countries at similar stages of development.

The comparison between different groups and selected countries is shown below in Table 2-5. The data indicate that the digital divide remained the same in 2012. However, developing countries are developing their ICT at a faster pace (+5.8%) compared to developed countries (+3.5%). The data also indicate that Ethiopia's ICT development was at much slower rate (+1.6%) than both developing (+5.8%)

and developed (+3.5%) countries. In the case of Ethiopia, the digital divide is increasing at a faster rate compared to Kenya (+9.3%), which indicates that the divide is decreasing at a faster rate, and in Tanzania (+4.8%), the digital divide is also decreasing.

Country	IDI		Change 2011-2012	% of Change	IDI Rank 2012 (157 countries)
	2011	2012			
World average	4.15	4.35	0.2	4.80%	N/A
Developed countries average	6.85	6.78	0.23	3.50%	N/A
Developing countries average	3.25	3.44	0.19	5.80%	N/A
Ethiopia	1.22	1.24	0.02	1.60%	151
Kenya	2.23	2.46	0.23	9.30%	116
Tanzania	1.57	1.65	0.08	4.80%	142

Source: ITU (ITU 2013)

Table 2-5 Comparison of IDI for groups and selected countries

Furthermore, comparing the three sub-indexes provides insights to identifying the ICT area that is developing or otherwise. The data shown below in Table 2-6 indicate the access sub-index, which measures the penetration level of different ICTs in various countries. The data indicate that developing countries are increasing the level of ICTs' penetration at a faster rate (+5.3%) compared to developed countries (+1.9%). The data also indicate that in developed countries some ICTs have reached saturation level. For example, according to ITU (2013), 98 economies have attained mobile-cellular penetration level of more than 100%.

The data also show that developing countries are increasing access development at a much faster rate. However, in the case of Ethiopia the penetration level is growing at faster rate (+2.4%) than the average growth rate of developed countries (+1.9%) but at slower rate than the average growth rate of the developing countries (5.3%). The data also confirm that for Ethiopia the digital divide is decreasing at a slower pace compared to other developing countries such as Kenya (+13.9%) and Tanzania (+4.27%). The access sub-index ranking confirms the low level of development for Ethiopia (149 out of 157 economies). The market structure of the telecommunications sector differs between Ethiopia and other countries such as Kenya or Tanzania. The difference in ICT policies and the structure of the telecommunications sector has resulted in different levels of ICT diffusion for these countries.

Country	Access sub-index		Change 2011-2012	% of Change	Access Sub-index Rank 2012
	2011	2012			
World average	4.6	4.7	0.1	3.90%	N/A
Developed countries average	7	7.1	0.1	1.90%	N/A
Developing countries average	3.7	3.9	0.2	5.30%	N/A
Ethiopia	1.6	1.64	0.04	2.40%	149
Kenya	2.35	2.73	0.38	13.90%	113
Tanzania	1.79	1.87	0.08	4.27	140

Source ITU (ITU 2013)

Table 2-6 Access sub-index comparison for groups and selected countries

The use sub-index measures the uptake of ICTs and intensity of usage and the data indicate that the digital divide remains the same, as can be seen in Table 2-7. However, the average use sub-index in uptake and intensity is increasing at a higher rate in developing countries (+17.3%) compared to that of the average sub-index in developed countries. Ethiopia's use sub-index shows an increase of 28% from 2011 to 2012, but it is still very low compared to Kenya or Tanzania. This is confirmed by the use sub-index, where Ethiopia ranked 153 out of 157 countries.

Country	Use sub-index		Change 2011-2012	% of Change	Use sub-index Rank 2012
	2011	2012			
World average	2.5	2.8	0.3	12.50%	N/A
Developed countries average	5.1	5.5	0.4	8.60%	N/A
Developing countries average	1.6	1.8	0.2	17.30%	N/A
Ethiopia	0.05	0.07	0.02	28.6	153
Kenya	0.95	1.15	0.2	17.39%	109
Tanzania	0.44	0.49	0.05	10.20%	125

Source: ITU, (ITU 2013)

Table 2-7 Use sub-index for groups and selected countries

The skills sub-index provides a proxy measurement of ICT skills. In the absence of ICT skills data, adult literacy, the gross secondary enrolment ratio, and the gross tertiary enrolment ratio are used to measure the skills sub-index. According to ITU (2013) the skills sub-index value for developed countries changes gradually because a high level of enrolment has already been achieved. The result is hampered by a lack of data for some countries. However, the skills sub-index provides the information about available human capacity in the country. The data indicate that Ethiopia's overall level of human capital is very low compared to developing countries as indicated by the skills sub-index rank (150).

Country	Skills sub-index		Change 2011-2012	% of Change	Skills sub-index Rank 2012
	2011	2012			
World average	6.6	6.6	0	0%	N/A
Developed countries average	8.7	8.7	0	0%	N/A
Developing countries average	5.8	5.8	0	0%	N/A
Ethiopia	2.8	2.8	0	0%	150
Kenya	4.54	4.54	0	0%	120
Tanzania	3.38	3.56	0.18	5%	137

Source: ITU, (ITU 2013)

Table 2-8 Skills sub-index for groups and selected countries

2.15 Measuring diffusion of the Internet in Ethiopia

Various researchers and groups have studied diffusion of the Internet. The infrastructure of telecommunications is important for the operation of ICT; it is also important for infrastructure planners and policy makers, as its effects are both technical and social. Pool (1983) argued that telecommunications infrastructure planning is actually social planning; the changes in seeking information and acquiring it evolve with the technology. Press (1996) added to the argument by stating that small increases in telecommunications networking have a significant impact on development. The three main ways of measuring diffusion are stated below, the first from Cyberspace, the second from 3Way labs and the last one is from the Mosaic group.

The Cyberspace Policy Research Group (CyPRG), based at the University of Arizona and George Mason University, has devised a method of studying the diffusion and use of the websites by countries. The study started in 1997 and analysed the websites used by 192 government agencies throughout the world (www.cyprg.arizona.edu). CyPRG devised the Web Site Evaluation System (WSES) that measures organisational transparency, interactivity, and openness of a government agency. This measurement was conducted in spring for each agency, in 2000 this WSES measurement covered over 120 countries. The amount of data made available by a government agency shows transparency of the agency, while ease of access measures accessibility. The result of this study showed that Western nations lead in openness but the data did not show a clear connection between wealth and how openness is expressed. The research showed that openness is strongly influenced by the level of national income and link to globalisation. The measure of openness does not show how much of the data are available on the website. The CyPRG findings show that the bulk of countries with little or no national-level website presence are located in sub-Saharan Africa.

The second diffusion measure was conducted by 3waylabs. It conducts Internet systems domain surveys automatically every three months on the behaviour of the Internet Systems Consortium (https://www.isc.org/solutions/survey). The purpose of this survey was to determine the level of diffusion of the Internet. The survey provided the number of computers connected to the Internet. The shortcomings of this survey are: it does not break down the data by country, computers behind a firewall may not be accessible to this survey, because of recent developments a single computer can act as a multiple system – and the machine is counted as two workstations. This gives a misleading number of hosts.

The GDI framework methodology is a result of the study by the Mosaic Group on the diffusion of the Internet in a country. It uses each country as a unit of analysis. It was modelled based on the Human Development Report of the United Nations. The GDI framework characterises the state of the Internet in a country in six measures. Each of these characteristics in turn has four levels of measurement. These six characteristics are: pervasiveness, geographic dispersion, sectoral absorption, connectivity infrastructure, organisational infrastructure, and sophistication of use. This methodology captures the main characteristics of the diffusion of the Internet in a country (Press et al. 1998). The detailed explanation of the GDI framework from the Mosaic group is depicted in Appendix B.

The Mosaic Group diffusion framework is a de facto standard measuring diffusion of the Internet in a country. It sets out a benchmark to measure diffusion of the Internet. Though the GDI framework considers each country as unit of analysis, in the case of Ethiopia the telecommunications service is concentrated in Addis Ababa, hence the measurement is skewed. According to Adam (2007), 60% of telecommunications customers are concentrated in Addis Ababa. In this case, the measurement of sectoral absorption can mainly be attributed to businesses in Addis Ababa. It can be argued that this measurement is a reflection of the business absorption in the capital.

2.15.1 Diffusion of the Internet in Ethiopia

ITU (2002) has been conducting a countrywide GDI study for a number of years. The GDI study for Ethiopia was conducted in 2002. The findings of the study are;

- Pervasiveness is rated at 1, experimental Internet user rate is 0.092% of the population. Users are concentrated in Addis Ababa, only 6% of users reside outside the capital.
- Geographic dispersion is rated at 1.5
- Sectoral absorption is at 0.5
- Connectivity infrastructure is at level 1
- Organisational infrastructure is at level 1, single
- Sophistication of use is at level 1.

The total is 6 points from a possible 20 points. The result shows a significant level of lack of ICT presence in almost all measures. The sectoral absorption is rated as 0.5, which is significantly very low. ICT adoption by SMBEs is included in the sectoral absorption measure. This is very low even by sub-Saharan standards.

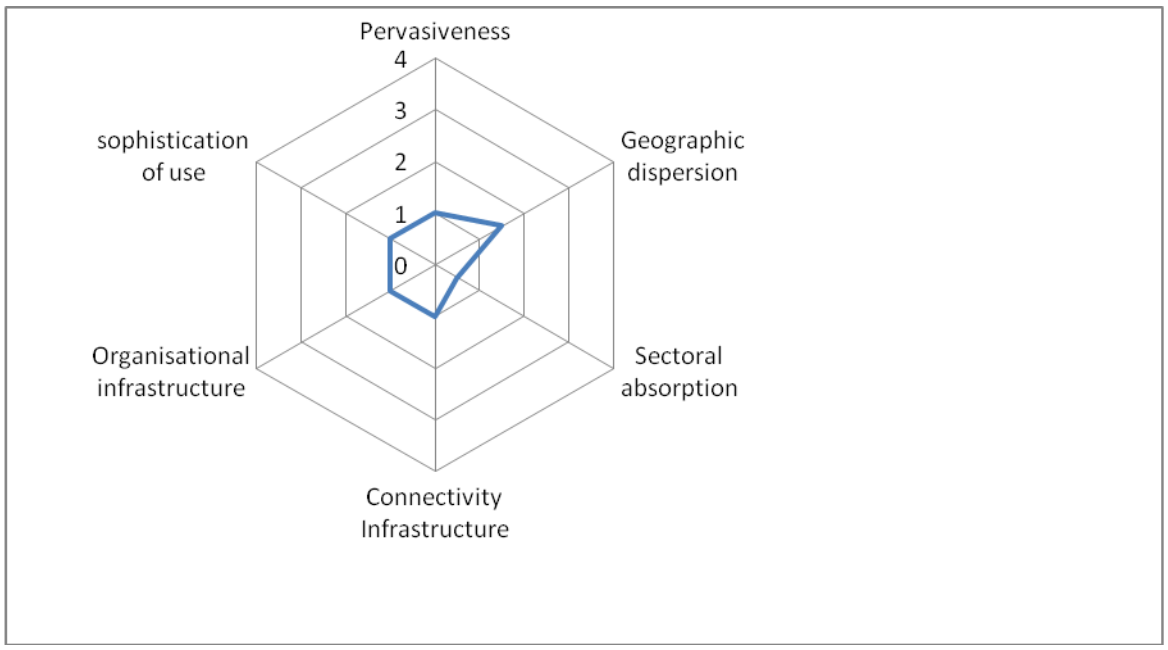


Figure 2-3: State of the Internet in Ethiopia, (ITU 2002)

2.16 Conclusion

The research context is presented in this chapter. Ethiopia is a developing country with a low level of HDI; out of its 90 million inhabitants, 22.1% (19.89 million) live below the poverty line. In recent years, the economy has been growing, but the country faces huge challenges in reducing poverty.

ICTs have been sighted by many international organisations as a tool to facilitate development and reduce poverty. However, ICTs have not been diffused in developing countries, creating what is termed as the digital divide. The diffusion of ICTs in Ethiopia's is lagging behind many of the developing countries. The telecommunications sector is characterised by a monopolistic structure with very poor infrastructure. The ICT development indicator from ITU ranks the country 151 out of 157 countries. The available analysis from ITU indicates that a very low level of diffusion has been recorded in all measures. The sectoral ICT absorption was the lowest measured at 0.5.

This study aimed to find the factors that facilitate and or create resistance to the adoption of ICTs. To find the factors that affect the diffusion of ICT, the hotel and tour operator business was selected. This sector was found to contain both adopters and non-adopters of ICT. Hence it was found to be appropriate to find the factors that affect both adoption and non-adoption of ICT.

Chapter 3 Literature review

3.1 Introduction

This chapter presents some of the academic literature reviews that are considered to provide the basis for this research. The key element of the literature review is to anchor the existing knowledge to provide the foundation for this research and to build on it; the main elements of the literature review are:

- To examine how individuals and organisations adopt ICT and the factors that influence this diffusion in society;
- To present the internal (to the organisation or individuals) and external (where organisations or individuals have no control) factors that influence adoption of innovation;
- To present the personal, organisational, national, and the international level factors that facilitate or hinder the diffusion of ICT;
- To review the identified facilitator and resistance agents and to establish the extent of influence these agents impose on the adoption of innovation in society.

This chapter first presents how the early (classical) adoption and diffusion research field developed. It is then followed by analysing the factors that originate internally to the organisation or individuals, and then the factors that originate externally to the organisations or individuals that are responsible for the adoption of innovation.

3.2 Society and technology

Technology is taken to be a force for change, especially in the area of social, cultural, and economic states of a society. The impact of technology, particularly during the Industrial Revolution, has been extensively documented (Taylor 1962, Roe 1916). Technology has three layers of meaning (Mackenzie and Wajcman, 1985), the first is the artefact itself, for example, cars or planes. Second, it also

includes the human activity or process, such as driving or flying, without whose activity the car is a collection of metal, plastic, and wire. Third, technology also refers to what people know and do with it; the knowledge to make a car is an example of technology. Technology is therefore made up of an artefact, knowledge, and activity. Furthermore, it is evident that knowledge, human activity, and non-human agents develop the artefact. In the final analysis, technology is a result of the interaction of human and non-human factors.

The effects of the adoption of technology on productivity and competitiveness are well documented (Dahlman 2007). The introduction of new motor-driven technology or a fully automated system on the factory floor can have many results including, increased efficiency and reduction of the work force. This increases unemployment and changes other social, economic and cultural settings. According to Karl Marx (1867), technology modifies the means of production; reflected in the ownership and distribution of income, type and size of the workforce, which in turn change the social, cultural and economic state of a society. Mackenzie argues that Marx's analysis of technology has relevance. In other words, technical changes bring about social changes.

Moreover, as Peter Large (1980) points out, the social change that comes because of the microchip, amounts to changes in the social configuration of society; it changes cultural, economic and social states of that society. This is a technological deterministic view. It argues that technological change brings about social change, but not vice-versa. For instance, technology such as television, the computer, and the Internet 'changed society'. These new technologies transform social communication, how organisations operate, and reflect how individuals' lives and work change. Furthermore, it advocates that the development and progress of technology is taken to be self-perpetuating, irrespective of social elements. It is assumed that technology follows a predetermined path beyond cultural and political influences.

The technological deterministic view is a reductionist theory; it reduces the relationship between society and technology to a single cause and effect association; technology being the independent variable, and all others, such as social and culture processes, interactions, and relationships, as derived from the technology. However, when considering the interaction between technology and society, it is not possible to differentiate between which is ‘cause’ or which is ‘effect’.

On the other hand, social determinism (social shaping) asserts the primacy of social in the relationship between society and technology. This is also a monolithic reductionist theory, a stance that asserts the social (and political) factors as a cause of technological development. Social factors determine the path of the development of technology, society determines which technology is adopted or which areas of technology receive research funding. The engineers and technologists, who design these artefacts, are part of a certain social group; hence, the implication is that their social group influences their creation. Furthermore, as Mackenzie and Wajcman (1985), define technology, as a social activity of society, in the use of tacit knowledge or in the creation process of knowledge that enables the creation of the artefact itself. Overall, technology is the result of multiple factors, such as social, economic, and cultural.

Mumford (1967) argues that technology does not just shape society but it is also shaped by society. In addition, there are socio-cultural conditions that precede the development of new technologies. He further argues that technology has an impact on society. Furthermore, Mumford argues that technology was designed and manufactured as a result of social factors. Winner (1986) coined the phrase “Do Artefacts have politics?”, He explains that what matters is not the technology, but the context, the political, social and economic system that the artefact is embedded in. It is not possible to isolate the technology from the social system, hence the political and social system plays a critical factor on the artefact. Winner (1980 p: 122) expressed it as follows:

"It is no surprise to learn that technical systems of various kinds are deeply interwoven in the condition of modern politics."

This is also iterated by the study of labour. Marx (1867) shows that artefacts do have politics; the means of production and the products are owned by the capitalist, giving the capitalist the power over the worker.

The above argument demonstrates that artefacts do have a political dimension. Furthermore, technology is also socially shaped, as shown by Mumford (1967). In addition, Mackenzie and Wajcman argue that technology does not develop following its own way or momentum, but it is shaped by social factors, what Mackenzie and Wajcman (1985) describe as "sociotechnical ensembles" the interaction of technology and society is mutual.

3.3 The early adoption and diffusion research (classical diffusion study)

The study of diffusion of innovation is dated back to the beginning of the twentieth century. Gabriel Trade, a French lawyer and sociologist, observed the adoption of certain innovations while other innovations failed to be adopted (Rogers 2003). Trade's core ideas focused on three related elements: invention, imitation and opposition. Imitation is the process of diffusion of innovation, whereas opposition is the rejection of innovation. He called it the law of imitation. Among other things, he identified how the rate of adoption is distributed in time, the S-shaped curve of the rate of adoption, and identified the importance of opinion leaders for the adoption of innovation. Though Trade did not described these concepts clearly and sufficiently, his insights helped in the development of many social disciplines. The development of a diffusion research tradition originated from anthropology and extends into many areas including early sociology, rural sociology, education, and into many other disciplines.

The opposition to new innovation or technology is not a new phenomenon. There are many studies about resistance forms and types. Martin Bauer (1995) argues

that resistance to technology should be viewed not from its dysfunctional consequences, as a force against progress, but also from various resistance consequences; it has both dependent as well as independent variable meanings, it is caused by other factors and will also have some consequences. It is a mechanism or a filter to select what is fit and appropriate for the socioeconomic condition. The source of resistance to technological progress or diffusion varies depending on the context. For example, Mokyer (1990) stated the following sources of resistance variables to technological development: demography, labour costs, science, religion, values, institutions and property rights, politics and the state, war, openness to new information, path dependency, geography, willingness to bear risk, life expectancy, and nutrition.

Furthermore, the source of resistance arises from not accepting what is stated as “the best solution” in the case of social engineering. Staudenmaier (1995) shows that planners, engineers and managers justify their plan as a control mechanism to enable them to reduce uncertainty of matter and people; any resistance to this plan has to be reduced. Simon (1981) challenged the claim that this is the only best and rational way and any resistance to this, considered as a force against progress, is inappropriate. New technology development is defined and bounded by time and space, and the claim of the only best and rational way is incorrect.

Diffusion of innovation happens with any new idea, process or artefact. For example, in the 1940s, Alfred L. Kroeber (1940) conceptualised cultural diffusion, the spread of cultural items such as: ideas, styles, religions, technologies and languages between individuals whether within a single culture or from one culture to another. Almost at the same time, Bryce Ryan and Neal C. Gross (1943) studied the diffusion of hybrid seed corn among Iowa farmers. The findings of Ryan and Gross confirmed Trade’s findings of the S-shaped curve of the rate of adoption. Furthermore, the findings also indicate the different role of mass media and interpersonal communication; while mass media communication provides general information, interpersonal communication plays a more powerful role in

convincing farmers to adopt the hybrid seed. In addition, the most significant findings were the identification of five different types of adopter categories, and five major stages in the adoption process. Adopters are classified based on the time it takes them to adopt an innovation. The first adopters are known as the innovators, these are the first adopters to adopt the innovation, followed by the early adopters, early majority, late majority, and last are the laggards.

The adoption process has five steps. The first is the awareness of the innovation by the potential adopter, this leads to the development of interest in the innovation, and then to the evaluation stage of the innovation by the potential adopter. The potential adopter tries the innovation and if it is favourable to the potential adopter then adoption of the innovation occurs. This early research resulted in the formation of new theoretical frameworks. The next section presents the background to some of the theoretical frameworks.

Other researchers have asked more fundamental questions: how social, political and cultural values affect scientific studies and technological innovation, (Pinch & Bijker 1984, Callon 1986, Law & Hassard 1999, Castells 2010, Hughes 1987, Rogers 2003) and the adoption and diffusion of innovations; how these, in turn, affect society, politics and culture. The interconnection of technology and society, the reciprocal effects, the complexity and the inter-dependency of the resulting networks become the new paradigm of study. An implication of these, for example, is that the diffusion of new technological innovation has an influence on the social sphere of society. Furthermore, the direction and level of scientific research and the resulting technological innovations are all influenced by society, politics, and culture.

3.4 Further development of diffusion research

Rogers (2003) provided a comparison of the major diffusion research traditions as shown below in Table 3-1. The comparison indicates that, though these studies

focus on different units of analysis (individuals, social groups, organisations), and study very different innovations, the findings indicate that there are some commonalities. Almost all follow the S-curve of diffusion of innovation, the characteristics of the adopters playing a critical role, opinion leaders influencing adoption, the communication channels used by the individual, social group, or organisation, and the relative advantages of the innovation, all these play a significant role in the adoption process.

However, these factors have different levels of significance. For example, in the case of public health and medical sociology, the major findings are that opinion leaders and communication channels played a significant role in the diffusion of drugs and vaccinations. While in the area of early sociology, rural sociology, and education, adopter characteristics play an important role in the adoption process. Similarly, in the case of communication research, communication channels are the key in the adoption process.

Diffusion study is a multidisciplinary research field; it encompasses many areas including marketing, information systems, medicine and communication. It focuses on how new ideas, practices or artefacts are adopted by individuals or organisations and diffused in society. It describes how a variety of factors affects the adoption of innovation in a society.

Diffusion Research Tradition	Number of Diffusion Publications (% of All Publications)	Typical Innovations Studied	Method of Data Gathering and Analysis	Main Unit of Analysis	Major Types of Findings
1. Anthropology	141(4%)	Technological ideas (steel axe, the horse, water boiling)	Participant and nonparticipant observation and case studies	Tribes or peasant villages	Consequences of innovations; relative success of change agents
2. Early sociology	10 (-)	City manager government, postage stamps, ham radio	Data from secondary sources and statistical analysis	Communities or individuals	S-shaped adopter distribution; characteristics of adopter categories
3. Rural sociology	845 (22%)	Agricultural ideas(weed sprays, hybrid seed, fertilizers)	Survey interviews, and statistical analysis	Individual farmers in rural communities	S-shaped adopter distribution; characteristics of adopter categories; perceived attributes of innovations and their rate of adoption; communication channels by stages in the innovation decision process; characteristics of opinion leaders.
4. Education	359 (9%)	Teaching/learning innovations (kindergartens, modern math, programmed instruction, team teaching)	Mailed questioners, survey interviews, and statistical analysis	School systems, teachers, or administrators	S-shaped adopter distribution; characteristics of adopter of adopter categories
5. Public health and medical sociology	277 (7%)	Medical and health ideas (drugs, vaccinations. Family planning methods, AIDS prevention	Survey interviews and statistical analysis	Individuals and organisation like hospitals of health departments	Opinion leadership in diffusion; characteristics of adopter categories; communication channels by stages in the innovation-decision process
6. Communication	484(12)	News events, technological innovations	Survey interviews and statistical analysis	Individuals or organisations	Communication channels by stages in the innovation-decision process: characteristics of adopter categories, and of opinion leaders; diffusion networks

Table 3-1: Adopted from Rogers' diffusion of innovations (Rogers 2003; p:42)

3.5 Sources of adoption and non-adoption factors

The sources of these factors are adopted and modified from Lefebvre and Lefebvre (1996) and given in Figure 3-1 below. The factors that affect the adoption of ICT by individuals or organisations originate from two sources; the first is external to the individual or organisation and the second is internal factors (Lefebvre & Lefebvre 1996). The level of determinants of adoption is shown below in Figure 3-1. The internal factors are divided into three areas: worker, managerial and organisational levels. In the case of micro and small organisations, the internal adoption factor is mainly influenced by the characteristics of the owner/manager of the establishment. However, the workers in these establishments have some level of contribution, such as contributing to technical knowledge and convincing the owner/manager to adopt or reject the innovation.

The external level factors are divided into three areas, the first is the area of industrial level factors, mainly focusing on the particular factors affecting the sector the organisation belongs to. For example, the hotel and tour operator sector is affected differently to that of the manufacturing sector as a result of the different characteristics of these sectors.

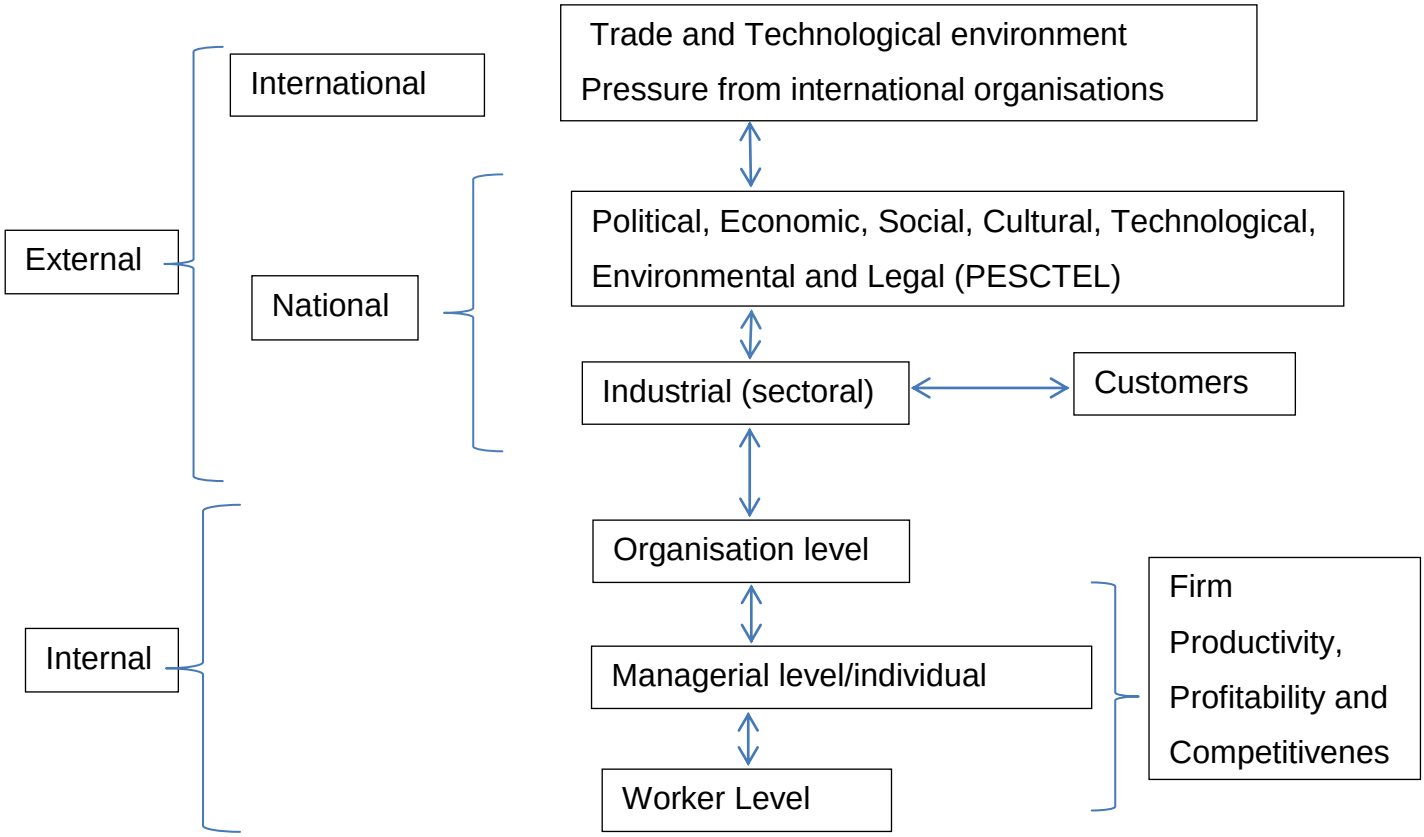


Figure 3-1: Levels of Determinants of technology adoption; Adopted and modified from Lefebvre and Lefebvre (1996 p : 29)

Secondly, on the national level, the political, economic, social, cultural, technological, environmental, and legal (PESCTEL) factors play a critical role in the diffusion of innovation in the country. These factors are specific to the particular country. The third level determinant factor is the international factor that arises from the pressure of international organisations and the trade and technological environment; these can be specific to a country, based on trade agreements. the technological network and connection factors. The internal and external determinant factors will be presented below.

3.6 Internal determinant factors

The internal factors that affect the diffusion of innovation in an organisation are divided into three categories, the first is the organisational characteristics, the second is the owner/manager characteristics, the third is the workers' level factors mainly arising from the workers' knowledge and attitude to technology adoption. The three internal factors are presented below.

3.6.1 Organisational level factors

There are internal determinant factors which affect the adoption of innovations; they originate from the organisation itself. According to Lefebvre and Lefebvre (1996) these internal factors can be categorised into three groups. The first is the organisation's past experience with technology. Organisations that have no experience of technology, or with limited exposure and experience, tend not to be innovative or early adopters of a technology. Other similar studies, for example Dholakia and Kshetri (2004) studied the adoption of the Internet by SMEs, argued that prior use of technology affects the adoption of the Internet in these organisations. According to Minishi-Majanja & Kiplang'at (2005), organisations without prior technological experience or knowledge suffer from uncertainties caused by the possible introduction of new innovation in the organisation. For this reason, such organisations tend to wait and see how others are doing before they embark on the adoption of the new innovation. Furthermore, Burgelman & Rosenbloom (1989) argue that past experience and exposure to technology resulted in accumulation of technical knowledge, and this in turn affects the future ability of organisations to adopt new technology.

Large organisations tend to have a set of procedures for different activities in the organisation, they have a degree of formalisation, and include adoption of technology or de-commissioning of systems. On the other hand, small organisations lack the institutional capacity to implement formalisation activities in the organisation. However, large organisations act slowly because of bureaucratic

inertia, whereas small organisations act reasonably quickly. The second factor is a firm's characteristics, such as available financial resources, centralisation, formalisation, technocratisation, and size. Damanpour (1992) reviewed 20 published studies and found that there is a positive relationship between organisation size and adoption of technology.

Small organisations also tend to have limited technical human resources, the degree of technocratisation affects the adoption of technology at various levels. For example, without technical human resources there seems to be a limited awareness about new technology. The lack of technical knowledge that matches the organisations' requirements to new technology limits the adoption process. Large businesses with in-depth knowledge of innovations are more likely to adopt the innovation (Thong 1999).

In the case of developing countries, Karanasios and Burgess (2008) argue that to solve the infrastructural problem, financial and capacity-related barriers facilitate the increase of the adoption of the Internet in small tourism enterprises. However, solving problems such as ICT infrastructural problems is deeply interlinked to how the telecommunications sector (including the regulator) is structured.

Other researchers argued that organisations adopt a technology because of perceived benefit of the technology, readiness of the organisation to accept innovation and the external pressure arising from competitive or customer demands. For example, Mehrtens et al (2001) argue that perceived benefit, organisational readiness and external pressure are the three important factors that affect the adoption of the Internet by SMEs. Similarly, Lacovou et al (1995) propose a model for Electronic Data Interchange (EDI) adoption by SMEs. The model identifies three factors that determine the adoption of EDI: perceived benefit, organisational readiness, and external pressure. Perceived benefit offered by the innovation to the organisation that results in bringing efficiency, competitiveness or any other benefit, is presented as a significant factor for the

adoption of EDI. Moreover, Rogers (2003) and Davis (1989) emphasised the importance of perceived benefit of an innovation as a major factor for the adoption of innovations by organisations.

The barriers that restrict the adoption of ICT in developing countries are many. For example, Chacko and Harris (2006) argue that in developing countries small and micro organisations are unprepared on many fronts, including finance and skills sets, so it would be a huge challenge to adopt ICT. There are three main obstacles: inadequate information, high adoption costs, and poor understanding of the dynamics of the knowledge economy. They further argue that in the Least Developed Countries (LDC), adoption is restricted by many factors, including being unaware of what the technology can do for these organisations. According to Moore's Law (1965), technology power doubles, and price halves every 18 months; consequently, the price of technology should be affordable to LDC. However, it is not. Cross and Tesone (2004, p. 563) put it as follows: "the labour saving technology is more expensive than the wage it saves because of higher cost of capital."

The organisation faces internal and external pressures when adopting innovation. The sources of internal factors are mainly the characteristics of the organisation, including the organisation's mimetic characteristics, its past experience of technology, its strategy, and the most important factors are the organisation's readiness, including available technological resources to adopt, and its size.

3.6.2 The role of owners/managers in the diffusion of innovation

In small and micro businesses, owners/managers are the decision makers in all areas of activity of their organisations, including the adoption or rejection of ICT. According to Rogers (2003) the individual adopter personal demographic characteristics, such as gender, age, education, and social and professional status, influence the individual adoption category. Referring to education and age,

Tabak and Barr (1996) argue that education and age of the CEO are critical factors for the adoption of innovation. The attitude of owners/managers towards innovation and involvement in the adoption process, including strong management influence (Leonard-Barton & Deschamps 1988), approval by managers (Moore & Benbasat 1991) or available resources coupled with managerial capabilities (Del Aguila-Obra & Padilla-Meléndez 2006) are some of the main characteristics that influence the adoption of ICTs in organisations.

Furthermore, the positive attitude of owners/managers towards an innovation coupled with the relative advantage, compatibility, and ease of use of an innovation, create favourable conditions for the adoption and diffusion of an innovation (Thong 1999). In addition, favourable perception of an innovation as a result of increased productivity or ease of operation is positively related to adoption (Davis 1989, Davis et al. 1989).

Owners/managers who are Innovators, the first adopters of an innovation, are more likely to have cosmopolitan social interactions, where they have access to information about new innovations from inventors. They tend to have high levels of communication and a close friendship with a circle of innovators. They also tend to have a higher level of technical knowledge because of exposure to new ideas (Rogers 1995). Furthermore, they take higher levels of risk compared to other adopters. According to Lippert and Davis (2006), on average, 50% of new information technology systems are considered to be failures, not diffused in society. However, innovators always tend to adopt these systems, though the failure of these systems results in a high level of financial loss for them. Nevertheless, innovators have substantial financial resources at their disposal to absorb these losses (Rogers 1995).

Furthermore, early adopters are different from late adopters in many ways; for example, Rogers (1995) and Brancheau and Whetherbe (1990) showed that early adopters are mainly opinion leaders who influence others to adopt an innovation;

they tend to have more years of formal education, they also participate socially outside their social group. In addition, they have access to various media and sources of information, where they obtain their knowledge about innovations. In general, early adopters have higher socioeconomic status than late adopters. In addition, early adopters tend to be less dogmatic and show greater rationality, have a favourable attitude towards change and science, and show an ability to cope with uncertainty and risk (Rogers 2003).

3.6.3 The role of the workers

In an organisation, the adoption of an innovation is mainly determined by the management, but the characteristics of workers influence the adoption of an innovation. These characteristics, including their age, attitude, and motivation towards the innovation, their influence, ability, and freedom to initiate the idea of adopting an innovation at different levels of the organisation, contribute to the adoption decision process (Lefebvre & Lefebvre 1996).

However, adoption of technology in an organisation is a complex process. Technology change and adoption may meet with strong resistance from workers because of the unknown factor it brings to the work environment, such as uncertainty of the job security of workers. The introduction of new technological innovation brings about reorganisation of workers, including bringing in new staff or releasing existing staff (Zammuto & O'Connor 1992). Furthermore, Dean (1987) argues that depending on their functional expertise, workers tend to prefer what they think is suitable for their area, but this can lead to conflict between various departments.

3.7 External factors

Many external factors affect the adoption of an innovation. These factors arise from the characteristics of the innovation to be adopted, the sector the

organisation belongs to, national and international factors. These factors are presented below.

3.7.1 Sectoral (industry) level factors

At the sectoral level, factors arising from the degree of innovativeness of the industry to adopt the innovation, availability of external technological know-how, the level of demand of major customers, external market demand of the sector, and overall level of competition in the sector, are the main factors for adoption/non-adoption of technology (Lefebvre & Lefebvre 1996).

The types of competitors, numbers of competitors and proximity of competitors govern the overall competition in the sector. This is one of the main external factors; it generates intense competitive pressure that affects the adoption of innovation in an organisation (Iacovou et al. 1995). This competitive pressure arises because organisations follow other similar key organisations and try to adopt what they perceive as a technological competitive advantage adopted by these key organisations. There is mimetic pressure exhibited by these organisations to survive. Furthermore, Michael Porter (1985) argues that technological change or adoption provides competitive advantage if it leads to lower cost or enhances differentiation, and goes on to argue for continuing competitive advantage, this technological change or adoption needs to be protected from imitation.

When key organisations adopt a technology, other organisations of similar size, with similar suppliers, a customer base with similar structure and similar strategy, tend to adopt the same technology as a result of competition (Mehrtens et al. 2001). Competition becomes a factor for the adoption of technology as a result of competition. Competition can also arise because of preferences of customers. Another pressure that forces organisations to adopt new technologies arises from normative pressure, which is the direct or indirect association with organisations

that adopt the innovation. This association exhibits itself through supply and customer relationships, through professional trade, business and other key organisations (Haverman 1993).

According to DiMaggio and Powell (1983), organisations are forced to adopt technology because of coercive pressure: this formal and informal pressure originates from a variety of sources, including regulatory bodies, resource dominant organisations, dominant customers, or the parent corporation. Knudson et al (1994) show that General Motors pressured its car dealers to adopt the Automated Clearing House (ACH) payment method. The characteristics of demand by customers also play an important role in the adoption process (Lefebvre & Lefebvre 1996). It includes types, numbers, and location of customers, also sophistication of demand, and the requirement imposed by major customers add pressure for the adoption of technology in the businesses.

According to Carvalho et al (2012) the external pressure on Portuguese local governments to report and legitimise their activity to external stakeholders enforced the adoption of a cost accounting system. Customers or potential customers of an organisation can also create this external pressure to adopt technology (Mehrtens et al. 2001). In the case of technology adoption, there is an expectation that organisations have e-mail accounts and a website. There is a certain degree of expectation by customers as well, and there is an issue of credibility felt by the organisations and this acts as a motivating factor for the adoption of technology.

3.7.2 National level factors

The national level factors originate from the PESCTEL conditions that affect the adoption of innovation. Many researchers argued that PESCTEL factors play a significant role, particularly in developing countries, on the adoption of ICTs (for example,.Teo & Tan 1998, Estache et al. 2009, Maiorano & Stern 2007, Gasmi et

al. 2009, Gagliardone 2014). Furthermore, ICTs' availability, pricing and technical support are all affected by these factors. Telecommunications policy and strategy at the national level set out the conditions for how the market operates: the liberalisation, competition, and independent regulation of the market.

There are a number of policy recommendations from the Broadband Commission including the importance of market liberalisation. The commission argues that countries, where there is a liberalised market, tend to have a higher level of uptake of broadband services, 1.4% higher on average for fixed broadband and up to 26.5% higher for mobile broadband (Broadband Commission 2013). Other policy recommendations include reviewing and reducing taxation. The commission argues that the revenues raised by taxation of ICT services and devices are more likely to be less than the broader economic advantages obtained through greater use of telecommunications services. These recommendations are not without controversy. Gagliardone (2014) argues that some recommendations from international organisations tend to benefit big companies rather than developing countries.

3.7.2.1. Telecommunications policy

The national telecommunications policy of the Ethiopian government, as stated in its main strategy document, "PASDEP", which runs from 2005 to 2010, and its new policy document "Growth and Transformation Plan (GTP)", which runs between 2010 and 2015, underlines the importance of telecommunications services for development and poverty reduction. It further states that 85% of the country's population lives in rural areas. The rapid development of the rural economy depends on access to an adequate level of telecommunications services. The PASDEP document, among other plans, further indicates that the policy aims to develop rural telecommunications and provide 300 rural towns with basic telephone and data services, and increase access to telecommunications services to the general public.

The document further identifies that developing telecommunications service coverage requires a considerable level of investment in terms of technology and expertise. To do so the government intended to engage with a strategic partner in the development of telecommunications infrastructure. In June 2010, France Telecom took over the management of Ethiopian Telecommunications, the only government owned telecommunications operator in the country. Although there was growth in the number of subscribers to telecommunications, it did not bring about a significant change in the growth of subscribers or availability of service provision compared to other sub-Saharan countries. Government ownership, regulation, competition, and tariff policies remain the same. The telecommunication market structure is set with one Government-owned public telecommunications company with one semi-autonomous regulator. However, both the operator and regulator report to the same ministry.

Before 1980, when almost all telecom operators were state owned, the operator in Ethiopia was also a regulator of the industry, mostly administering frequency allocation and coordination. The ownership and governance of the telecommunications sector have changed since the mid and late 1980s. The continued liberalisation and competition in the telecommunications market require an independent regulatory organisation to facilitate effective competition in the market. In 1980, privatised telecommunications operators accounted for 2% of the market in 167 countries, by 1998 42% of telecommunications were liberalised. In other words, in 1990 there were 10 regulators, by 1999 the number had increased to 84. Li et al (2005) argue that political structures and macroeconomic variables greatly affect changes in telecommunications policy.

The advantages of introducing liberalisation, regulation and competition in the telecommunications sector increase availability of services and growth of infrastructure as a result of higher levels of investment and are generally followed by lower tariffs (Maiorano & Stern 2007, Fink et al. 2003). As Gasmi & Recuero

Vitro (2010) point out, there is a positive relationship between the decision to introduce competition in the digital cellular segment and the growth of the fixed-line segment. Kirkman et al (2002) argue that for ICT to be effective in facilitating development, the level of competition in the economy, particularly in the telecommunications and ICT sectors and the extent to which ICT has been incorporated into businesses and government activities, plays a critical role.

In a similar line of argument, Stern and Trillas (2003) argue that the independence of the telecommunications regulator provides better services in the telecommunications sector. However, historical data have not yet sufficiently shown evidence of the gain from an independent regulatory framework. But, Stern and Trillas (2003, p 201) argued that a poor regulatory framework is developing countries affects the industry negatively as stated below.

> *"We can show the disasters that result from regulatory arrangements with poor governance, including the bad outcomes arising from wide, non-accountable discretion, particularly in developing countries"*

Furthermore, Maiorano and Stern (2007) argue that countries that have introduced independent regulators, liberalised long-distance services and allowed majority privatisation of the incumbent, show higher mobile penetration. This has also been confirmed elsewhere in Africa, for example in Tanzania the liberalisation of the telecommunications sector resulted in a high level of competition between the mobile phone operators, resulting in a higher level of mobile phone diffusion (Hassan & Semkwiji 2011).

Furthermore, Billon et al (2009) argued that for developing countries, some specific measures might increase ICT diffusion, such as the use of the Internet and PCs. These economies are price sensitive to the cost of ICT adoption, particularly the price of the Internet is a key determinant in these countries. In addition, deregulation, liberalisation, and competition measures introduced by regulators in telecommunications infrastructures and services, increase ICT diffusion (Billon et al. 2009).

3.7.2.2. Political factors

The political system of a country, depending on whether it is democratic or non-democratic, conservative or liberal, effectively determines how the telecommunications market operates in that country. The policy pursued by a nation on telecommunications services determines how it functions, its ownership and competitiveness of the sector, and hence determine the affordability and availability of ICT; it plays a critical role in the adoption and diffusion process. The ability of national political conditions to reform telecommunications policy is reflected in how the political system is organised. According to Li et al (2005), reform in the telecommunications sector is attributed to the degree of difference between interest groups in the political structure of the country. Li et al (2005) go on to argue that the political structure, especially the decision-making apparatus and the ideology of the legislature, plays a critical role in opening up the telecommunications market. Furthermore, reform of the telecommunications sector is less likely in countries where the incumbent operators have already made a large investment. In addition, Galal & Nauriyal (1995) and Levy & Spiller (1996) argue that the political structure and the configuration of interest groups determine the likelihood of telecommunications reform. There is a high level of investment in Ethiopian telecommunications, recently one of the large Chinese telecom companies, Zhanxing Telecom Corporation (ZTE), has invested $1.3 billion dollars; whether this will be a hindrance to liberalisation of Ethiopian telecommunications will be seen in the future (Davison 2012).

The political context of a nation determines how the telecommunications sector is organised and functions in the country. Gasmi et al (2009) point out that the quality of political institutions, ie political accountability, is a key factor in creating a strong regulatory body for the telecommunications sector. Moreover, Gasmi et el. (ibid) show that there is a strong positive relationship between political accountability and the performance of regulators in developing countries. Quite simply, countries

that have accountability in their political system create strong and effective regulatory bodies. By contrast, Maiorano and Stern (2007) argue that there is no convincing evidence to conclude or explain the choice of regulatory framework based on a country's institutions. However, Henisz and Zelner (2001), argue that a country's institutions greatly affect the diffusion of ICT in that country. They go on to argue that political institutions play a critical role on how telecommunications services are run in the country.

Other key institutions that affect the availability of information, its control and access, are managed by many organisations. In many developing countries, information flows in one direction, from the top down; what is considered to be appropriate for public consumption is controlled and regulated and passed down the chain (Sturges & Chimseu 1996). However, the high level of innovation in the telecommunications field in the last decade, the availability of information and communication to the masses, have increased the importance of telecommunications, particularly in providing media outlets for the masses. Information is communicated peer to peer, individuals are able to communicate to the masses using new technology, and as a result governments are losing control and regulation of information. Soper and Demirkan (2012) argue that the telecommunications network is affecting democracy and corruption in many Arab countries. The importance of telecommunications infrastructure has been identified by many governments as an important and critical factor.

The structure of the government also plays a role, for example, federalism plays a role in policy reform particularly in the telecommunications sector. Qian and Weingast (1997) argue that there are two main factors in the way that federalism has an effect on policies. First, federal governments have no central banks and the second is the limited availability of resources. For these two reasons federal governments are generally unable to bail out telecommunications companies. Furthermore, they are more likely to allow conditions that are more favourable for new companies to enter the telecommunications sector; this creates a competitive

environment and results in the creation of competitive tariffs in the market. However, in some developing countries like Ethiopia, federal governments have no power to introduce any policies in the telecommunications sector.

There are many political theories that provide insight into the factors affecting policy changes on the structure of the telecommunications market, including the power of independent regulators and their remit (Li et al. 2005). Firstly, public interest theory asserts that government is a principal agent for constituents (Becker 1983, Peltzman 1976) . Hence, the government acts as a perfect agent for the public at large, and implements regulation to protect public interest. However, according to Hantke-Domas (2003), public interest theory is more of a cover for self-protection schemes of personal interest to politicians and policy makers, and goes on to argue that what the theory provides in the case of law and politics can only be described as giving a philosophical argument, whereas in economics the idea of public interest is non-existent.

George Stigler (1971) formulated a new theory explaining regulation, the Chicago Theory, also known as the Theory of Economic Regulation. Stigler argues that regulations are not primarily for the benefit of the public good, but the special group pressure and role that these regulations bring. The interest of politicians in being elected or re-elected requires their vote to be maximised, and to do so, they have to align their interest with powerful groups and associations among their constituents. The overall result will be that the interests of special groups and associations will be protected while the less organised members of the public would be the unlikely beneficiaries of reform of regulation and policy.

On the other hand, New Institutional Theory focuses on the role of key institutions and their ability to create the necessary policies, including a regulatory body for the telecommunications sector of a country. The theoretical emphasis on a few institutions, among others, focuses on institutions that resulted in the formation of the rule of law and democracy. A country's institutions that are able to hold the rule

of law and democracy will be able to attract investors and make privatisation possible (Williamson 1994). Furthermore, Williamson added that in countries where there is trust in law and democracy makes privatisation more credible.

However, Williamson goes on to argue that, in an authoritarian regime, if the powerful executive finds telecommunications reform provide net benefits in terms of political terms, then it is easier to reform the telecommunications sector. Williamson goes on to provide examples such as the military regimes in Argentina (1966 and 1976), Brazil (1964) and Chile (1973).

In the case of the theory of ideology, political parties with different ideologies prefer distinct policies that are aligned to their ideology. For example, parties of the left represent the interests of workers, while right of centre parties represent the interests of businesses and tend to introduce market reforms. In this setting where the ideology of parties is diverse and polarised, there are checks and balances to proposed reforms. Li et al (2005) argue that in a democratic society where there is polarisation of ideology, reforms are more likely than in non-democratic countries. On the other hand, when parties have similar or overlapping ideologies regarding a particular issue, a homogenous perspective, there is a high likelihood that there will be faster policy reform (Kalt & Zupan 1984).

The private interest theory is a social theory that predicts policy outcomes as a result of the influences of interest groups in both democratic and non-democratic countries (Li et al. 2005). These regulations or reforms emerge from the action of individuals or groups with the objective of maximising their self-interest. Other researchers (Stigler 1971, Peltzman 1976, Becker 1983) argued that in democratic societies, politicians formulate policies as a result of private interest, because policies are generated by the demand of individuals, organised groups, and constituents.

The policy outcomes in a democratic society are determined as a result of a competitive equilibrium generated by private interest groups. Li et al (2005 , p,1309) show that “the effects of interest groups are stronger in more democratic countries, suggesting that democracy appears to affect the pace of reforms by magnifying the influences of interest groups.”

The crisis theory suggests that economic crises foster policy reforms. Li et al (2005) argue that there is some evidence to show that the crisis theory explains policy reform in the telecommunications sector. Li et al (2005) further argue that the speed of response to crisis drives reform of policies and is a result of the checks and balances of legislators.

In Ethiopia, the governing party has been in power for more than 20 years; although elections were conducted every five years, the conditions created by the government were not conducive to the true democratic process. Gagliardone (2014) studied the adoption of two large scale ICT projects in Ethiopia, Wordanet and Schoolnet. Wordanet is a network that connects all district administrative offices to the prime minister’s office, and Schoolnet is a similar network used to transmit pre-recorded classes to high schools throughout the country. The adoption and implementation of these projects have been driven by the ideology of the government of Ethiopia to build ethnic based federalism. ICT is used as a tool to extend the political power of the government. This study confers what Winner (1980) put forward: that technology is politics. Another study in South Africa indicates that politics plays an important role in how telecentres are planned and managed, and how this resulted in empowering certain users above others (Braathen et al. 2012).

3.7.2.3. Cultural and socio-economic factors

The culture and socio-economic conditions of a nation create the factors that affect the diffusion of innovation. The policies implemented by governments on economic

issues, and its results, such as general economic conditions, management of inflation, corruption, and exchange rate, affect how organisations and individuals adopt ICTs. These economic factors affect the diffusion of innovations differently, some innovations are diffused easily while others fail totally. In addition, the economic effects also vary for different social groups.

A nation's economic policies affect diffusion of innovation. For example, import taxes on innovations can have detrimental effects on organisations and individuals who want to adopt these innovations. General economic conditions determine the trend in pricing, which in turn affects an organisation's ability to adopt an innovation (Gurbaxani & Mendelson 1990). This was also iterated by Krieg (1995), who argues that general economic conditions which result in deficient material wealth are a major factor that inhibits adoption of technology in poor communities.

The importance of the telecommunications sector is growing continuously. Li et al.(2005) reported in 2005 that the revenue from this sector contributes 2-3% of GDP in most countries. Studies of one of the economic factors of a nation, GDP per capita, shows that it is the most important determinant in the diffusion of innovation in the developed world. In many cases, there is a positive relationship between GDP per capita and adoption of an innovation by organisations and individuals. The higher the GDP per capita of a nation the more likely that innovation adoption by organisations and individuals increases (Billon et al. 2009).

Adoption of innovation resulted in the replacement of the old by the new, computers replaced typewriters, vacuum cleaners replaced brooms, and cars replaced the horse and carriage; all these replacements required a cost to be incurred for switching. The general economic conditions linked with the ability of the individual's or organisation to meet the cost of switching determine the level of adoption of the innovation (Shapiro & Varian 1999).

The role of institutions in bringing about effective control and governance of macroeconomic conditions is important, Stern and Trillas (2003) compared an independent central bank of a nation to that of an independent telecommunications regulator. In historic terms, an independent central bank offers lower and less variable inflation, an independent central bank with a better governance arrangement outperforms an independent central bank with fewer governance arrangements. However, whether this is a causal relationship or whether it is the result of a selection of different policies, is debatable.

The social factors that affect diffusion of innovation, as agued by Rogers (2003), include age, gender, education, being cosmopolitan. Brancheau and Wetherbe (1990) confirm what has been predicted by Rogers, that early adopters differ from late adopters. The factors that differentiate these two groups include age, education, exposure to media, interpersonal communication exposure, and external social participation. Social participation brings its own pressure and influence on individuals; social pressure from friends and families tends to force individuals to adopt innovation (Moore & Benbasat 1991).

In addition, Leonard-Burton (1987) argues that demography, skills and years of experience moderately discriminate in the adoption of ICT. In the case of education, Rogers (2003) argues that educated individuals tend to be early adopters. Mokaya (2012), in his study of the adoption of ICT in Kenya by small enterprises, found that level of education and knowledge has a significant effect on adoption. However, Raho et al (1987) argue that educational commitment, whether one is committed to education, actively or passively, determine behaviour in adoption. Individuals with an active education commitment tend to be early adopters when compared with passive or uncommitted individuals.

For many potential adopters there is a minimum knowledge level that one is required to have to adopt a technology. However, there are technologies that impose an exceptional knowledge burden on would-be adopters, these act as a

barrier and influence adoption negatively (Attewell 1992, Cohen & Levinthal 1990) On the other hand, innovation that removes the burden of knowledge of potential adopters, tends to be adopted. For example, Nugugi et al (2010) argue that in Kenya, traditional banking requires customers to read and write to open a bank account . This is a barrier for illiterate potential customers. The mobile money system, M-Pesa, does not require form filling or customers to be able to read and write. Hence it removes the barrier and M-Pesa has been adopted by many people in both Kenya and Tanzania. The Ethiopian government has been working to launch a similar service and the project has been running since 2009, but is delayed. The project is known as M-Birr, named after the Ethiopian currency Birr. The project was expected to start in January 2014 (Magada 2013), but it has been delayed yet again.

There are many innovations that have failed to be diffused in society as a result of incompatibility with the cultural and social values of society (Eason 1988). For example, the works of Wellin as reported by Rogers (2003, p:1): an attempt by the Peruvian Ministry of Health, intending to reduce water-borne diseases, put in place a programme to introduce boiling drinking water for a Peruvian village to improve villagers' health, failed to diffuse in society. The main reason was, that in Peruvian culture, all things are classified as cold or hot. Anything classified as hot is fit only for the sick and boiled water is classified as hot. The villagers refused to boil water as it was only suitable for the sick. This created a cultural incompatibility for the adoption of boiling water.

3.7.2.4. Technological factors

The rapid growth of technological innovations in the past three decades has transformed how individuals and organisations communicate, work, and interact. Traditional telecommunications services have been transformed beyond recognition; the generation, transformation and communication of information has changed, creating instant communication between individuals and organisations.

Between 1985 and 1999, many developed countries reformed their telecommunications policies; this resulted in a significant level of improvement of their telecommunications networks. As a result, both teledensity and labour productivity more than tripled (Fink et al. 2003).

ICTs significantly change how organisations and individuals operate, by creating a network of connections, where applications enable access to the World Wide Web for information exchange, e-commerce, and creating gateways for national and international organisations to communicate with the wider world audience. This technological innovation enables small and micro business to have access to a bigger market compared to the traditional method of attracting local customers. Likewise, it provides the individual with a greater level of access, and freedom to access products and services, participate in the social media sphere, and this empowers individuals to become sources of information as well as consumers. One of the barriers to the adoption of technology in LDC is unreliable telecommunications infrastructure. Karanasios and Burgess (2008) show how SME owners use innovative methods to overcome inadequate and unreliable infrastructure by using a satellite link to connect to their customers.

The adoption of ICTs can have unexpected effects on individuals, groups, and organisations. Soper and Demirkan (2012) argue that the effects of mobile phones on fostering democracy and empowerment in the emerging countries were not anticipated, and yet that is what they do. The Internet provides transparency which curbs corruption. For example, in Kenya and elsewhere in Africa, the use of mobile phones for financial transactions was not part of the design for mobile phones, and yet that is how they are used (Ngugi et al. 2010). Furthermore, the unanticipated effects of ICT's adoption encompass many areas, including the social, economic, and political spheres of a nation.

The influence of ICTs is felt on many fronts, its importance is mainly enabled because of its network capability to connect individuals and organisations

throughout the world. The infrastructure of ICTs provides the integration required by the applications that enable organisations to work together. This integration enables individuals to use services and products provided by different organisations. For example, individuals are enabled to book hotels or airline tickets using the World Wide Web. This integration of financial institutions and other services providers connects them seamlessly to each other by using the World Wide Web. It becomes more important for individuals, organisations and governments as technology increases its reach.

The continuous expansion and availability of ICT encourages individuals and organisations to adopt it, though the adoption by individuals and organisations is intended to benefit themselves; this adoption increases the value of the ICT network itself. For rational, individuals and organisations, aiming to maximise utility and benefit tend to replace old technology by new technology (Davis 1989). The increase of the value of ICT networks is sometimes referred to as “network externalities” (Shapiro & Varian 1999) “Network externalities” can be positive or negative depending on the value gained, an increase in value is a positive, a decrease is negative.

A typical example is the telephone network; as the number of subscribers increases, the value of the telephone network increases, as it can offer connection to an ever bigger number. The increase of the positive value of network externalities, particularly when the adoption reaches “critical mass”, starts to influence individuals and organisations to adopt them as a result of the dynamics of community-wide levels of adoption (Markus 1987, Katz & Shapiro 1986). Moreover, organisations adopting a technology that their suppliers and customers frequently use, creates positive values that benefit these organisations (Farrell & Saloner 1985). Bouchard (1993) shows that an organisation’s decision to adopt EDI was primarily based on the number of trading partners that had adopted it, and did not depend on the usability of the EDI system itself.

Similarly, once many customers of an organisation adopt an innovation, irrespective of the usability of the innovation, the organisation adopts the innovation as a result of the positive network externalities, and the pressure on the organisation to continue to provide products and services to these customers (Hill 1994). Positive network externalities, the pressure to continue to provide products and services to existing customers, tend to act as adoption facilitator factors.

3.7.2.5. Environmental factors

The relationship between environmental sustainability and ICT is complex and is not well understood. This relationship can be viewed in two ways. The first is the ability of ICT to contribute to environmental sustainability through education, creating efficiency, and behavioural change (Tomlinson 2010).

The second is ICT's negative effect on the environment by causing degradation. This degradation occurs as a result of energy consumption, resource depletion and e-waste (Rattle 2010). Furthermore, as the efficiency of ICTs increases, the total use of resources also increases (sometimes it is called Jevon's paradox) (Alcott 2005). This in turn results in more and more production of ICTs, this increase in turn requires more resources causing resource depletion and e-waste.

Environmental sustainability concerns become an increasingly important factor for two main reasons. The first is the general degradation of the environment that increasingly affects life on earth. The second is that the majority of the poor lives in rural areas where sustainable productive capacity in agriculture and fisheries continues to be a concern (UN 2001).

ICT can help to minimise the effects of this degradation; for example, before the introduction of the mobile phone, the fisheries sector in the state of Kerala in India used to waste 5-8% of the daily catch because sellers were unable to find buyers. The gradual increase in the use of mobile phone by fishermen to find buyers and

coordinate the sale of their daily catch resulted in waste being avoided (Jensen 2007).

In the case of the management of e-waste, it is becoming more challenging. The Basel action network (www.ban.org), was founded and focuses on the proper management of toxic substances originating from ICT equipment and other products. It was formed to strengthen the Basel agreement, among other things, and works to strengthen the Basel convention, a multilateral environmental agreement, which in 1994 passed a landmark decision to stop the export of toxic waste, dangerous products, and polluting technologies from rich industrialised countries to poorer developing countries. The organisation also focuses on preventing disproportionate and unsustainable toxic dumping on the poorest residents.

Developing countries tend to import second hand ICT tools, such as computers, printers and monitors, for economic reasons, and these systems tend to be obsolete sooner rather than later for two reasons. Firstly, new software systems almost always require higher speed and bigger memory and storage space in the computer. However, old computers cannot provide that and are not capable of handling the new software, so old computers are not able to use the new software. Secondly, the software loaded on these old systems is incompatible with the new software and the system is no longer useable. These old systems become e-waste. The e-waste cannot be managed properly, because of lack of technical know-how and finance, causes environmental degradation and becomes a health hazard.

Other environmental issues include the challenge from the environment for the adoption of innovation in at least two ways. The first is additional system required to find work around to solve the challenge brought about by the environmental condition. For example, in mountains area access and availability of communication signals may limit adoption of ICT. The second is the limitation of

choice of technology that can be adopted as a result of the environmental situation. For example, additional investment may be required to make ICT available as a result of geographical signal interference, this in turn increases the financial burden on the adopter. As with other innovations, for example in agriculture, a wide range of environmental and sustainability factors affect the diffusion of innovation (Padel 2001). Consideration of environmental sustainability is becoming more prevalent when considering the adoption of new innovation that has an impact on the environment.

3.7.2.6. Legal factors

The lack of legislation in dealing with emerging new technologies is noted in developed countries, and is more pronounced in developing countries (Ng'ang'a 2009). According to Ng'ang'a (2009), there is no legislations in Kenya to deal with threats arising from identity theft, computer crime, money laundering and fraud.

On the other hand, when governments intervene through regulation, it can be a positive force for research and development of new products, for example, in the case of dangerous substances. Taylor et al (2003) show the positive contribution of directing the path of research and development of environmental control technology for hazardous substance such as sulphur dioxide (SO_2) and it results in the adoption of these new innovations. The law forces organisations to adopt these new environmental control technologies.

The lack of consumer protection legislation, particularly in developing countries, extends to both private and government organisations. However, complaining about government organisations is more challenging. The problem is exhibited when individuals adopt a faulty product or inadequate service, or when any other unfair practices by organisations cannot be challenged. Hence, non-existence of legal protection for innovation adopters from faulty products or unfair treatment by organisations forms a barrier to diffusion of innovation (Nielsen et al. 2007).

3.7.3 International level factors

Innovations that cross national borders, such as telecommunications systems, require negotiations and agreements for smooth operation of the system. These negotiations and agreements include many aspects of the system, including standards and tariffs, which will have a direct consequence at the national level and trickle down to organisations and individuals. For example, tariff agreements between countries have a direct consequence on the fees paid by the organisations or individuals to the telecommunications service provider.

The effort of international organisations to reduce the digital divide between developed and developing countries raises awareness of the failure of diffusion of ICT in developing countries. Developing countries that lag behind with the diffusion of ICT are reminded and advised by international organisations to change their policies to increase the rate of adoption.

The role of NEPAD in formulating e-Africa information policies, strategies, and programmes has become a catalyst for the adoption of new technology. One such program to connect 20 African countries with broadband networks has helped to further facilitate adoption of ICT in these countries. Similarly, the role of WSIS in identification of the digital divide and the effort to formulate policies to reduce the digital divide is helping developing countries to reduce barriers for the diffusion of ICT. Furthermore, one of the criteria for Ethiopia's membership of WTO is the liberalisation of the telecommunications and banking sectors. Though this policy prescription has been criticised for being "one fit all attitude" (Moyo 2010, Unwin 2007), these policies have put pressure on developing countries to adopt the prescribed policies.

The ITU report on measuring the information society provides a comparison of ICT development among countries. The report ranks countries based on their ICT development, and by implication it shows how the policies followed by each

country resulted in its ranking. The report encourages governments to look into their telecommunications policies. The recommendations and conditions are not welcomed by all, For example, the government of Ethiopia recently responded through Dr Debretsion Gebremichae, Minister of ICT, “ICT is developing in Ethiopia, the method used by ITU is not accurate enough to measure its progress” (Mekonnen 2013). This shows that the Ethiopian government did not acknowledge the lack of diffusion but argued about the methodology used by ITU to measure the digital divide.

3.8 Conclusion

This chapter presents the factors that affect the diffusion of innovations. It presents the internal factors to the organisations or individuals and factors that are external to both the individuals and the organisations. In the case of the individual, the internal factors arise from the personal characteristics and demographic factors, such as age, gender, education, attitude towards innovations, communications, and being in a metropolis, affect the adoption of innovation.

The internal factors that affect the adoption of innovation in organisations is presented. The organisations’ characteristics such as: size, available resources, past experience of adoption, financial resources, organisation of strategic policy and orientation, perceived benefit, organisational readiness, and external pressure, are the main factors that affect the adoption of technology in organisations. Furthermore, the characteristics of the owner/manager and the workers, particularly in small organisations, affect the adoption of technology. The characteristics of owners/managers in organisations, such as age, educational level, positive attitude to innovations, greatly affect adoption. Similarly, workers’ age, technical knowledge and attitude to new innovation, also affect adoption.

This chapter also presents factors that are not included in the diffusion of innovation theory, but have a direct influence on the adoption of innovation by

individuals and organisations. These factors arise outside the individuals and organisations, neither the individual nor the organisation has control over these factors. These external factors arise at national and international level. The national factors include: political, cultural, socio-economic, technological, environmental, and legal factors. On the international front, the factors arise because of the characteristics of innovations that cross national boundaries and hence the existence and operations are governed by international agreements. These agreements determine the technical standards and pricing of services offered by these systems. International organisations have prescribed policies, particularly for developing countries, on many issues including economic, political and institutional issues such as telecommunications and the electricity power sector structure. Though these prescriptions have been criticised for being “one fit all attitude”, the policy prescriptions have put pressure on change of policies in developing countries.

In conclusion, this chapter presents the main factors that influence the adoption of technology in organisations. The next chapter presents how these factors are modelled in various theoretical frameworks. It goes on to present how Rogers’ diffusion of innovation theory is selected and used to formulate a theoretical framework that guides the research.

Chapter 4 Theoretical framework development

4.1 Introduction

This chapter presents the theoretical framework used for the study of the adoption of ICTs in Addis Ababa, Ethiopia. It begins with an overview of the role of social theory in research. It presents the research context, and the existing theoretical frameworks to explain the adoption of technology. It sets out selection criteria for choosing a theoretical framework that closely describes the phenomenon under investigation. Rogers' diffusion of innovation theory is found to be the most suitable to explain the problem under investigation. However, it does not fully explain the phenomenon. To include all factors that influence the diffusion of ICT in the local context, PESCTL factors were included as a theoretical framework alongside with Rogers' diffusion of innovation theory. It proposes a new theoretical framework based on the work of Rogers' diffusion of innovation theory. The proposed theory can be used to research a similar socio-economic context in developing countries.

4.2 Do we need a theory?

Some researchers argue against using a theory when conducting research for a number of reasons. For example, John Van Maanen (1995) argued that more descriptive narratives based on intensive ethnographic study are appropriate for building knowledge, where later a theory can be developed; he suggested a ten-year moratorium on theoretical papers. The implication of this argument is that theory should not be injected into research for the sake of it.

Baker and Thyer (2000) disagreed on PhD programmes that require students to use a theoretical framework for their study, even when the study has not been guided by any explicit theory or tested based on the outcome of the research. Other researchers emphasise the importance of accumulation of empirical findings

as more important than trying to generalise in a theoretical framework. For example, Flyvberg (2006) takes this further by arguing that social science cannot produce universal context independent theory, but it offers concrete context-dependent knowledge. Similarly, Casley and Lury (1987) argued that a case study is applicable to initiate change of development policy in developing countries rather than a generalisation of science.

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This research is not aiming to put forward an argument on the importance of theory against the accumulation of case study knowledge, particularly in the case of diffusion studies in developing countries. But it does report on how existing theories can be selected and adopted to fit in this particular research context.

4.3 The role of theory in research: why does it matter?

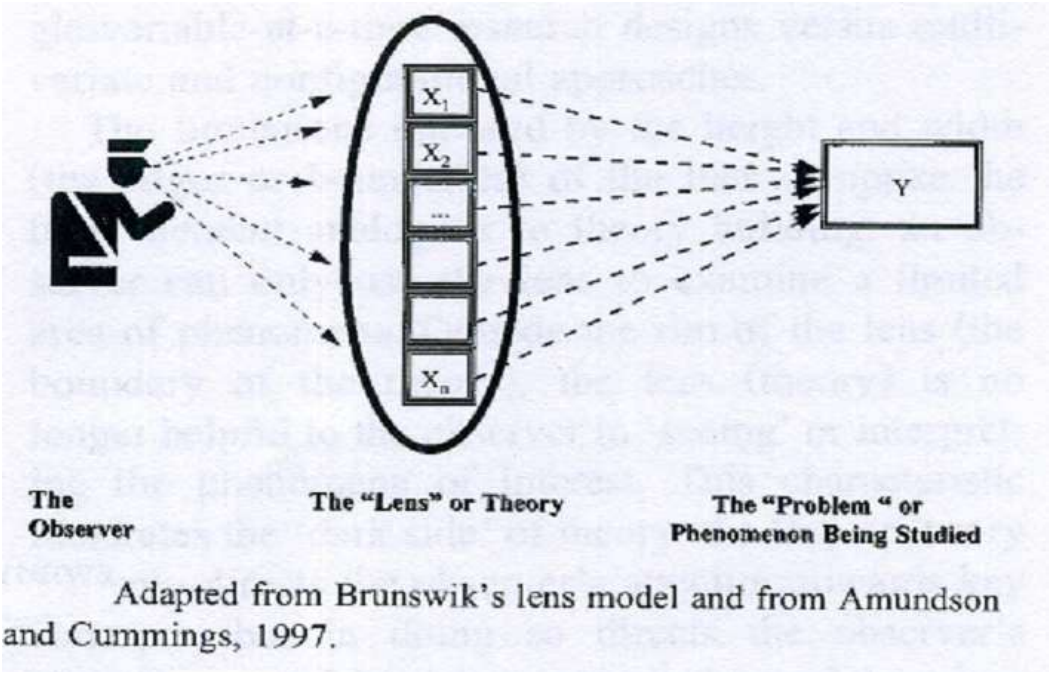
Strauss (1995) argues that the role of a theory is to provide the key variables of the phenomena under study with underlying assumptions. In addition, Strauss explains that a theory is a model that tries to replicate the real world. The real world is far more complicated and theories simplify and make sense of it by simplifying and reducing it to the most important factors.

The advantages of explicitly stating the theoretical foundation used in research contribute to the verification of the theory from the particular angle of the investigation. Alternatively, if not verification, it generates falsification of the theory as argued by Popper (1963). In addition, the theory can be used by different disciplines to investigate a phenomenon, which the theory was not developed for. However, researchers do not necessarily specify the theory that guided their research; it may be implicit in the work. Furthermore, Weick (1985) argues against unstated or implicit use of a theory, and he argues that it deters understanding, he compares it to a blind spot.

A theory is described by Brunswik's 'Lens Model' as adopted by Amundson and Cummings (1997) as shown below in Figure 4-1, The model indicates that the 'lens' consists of Xs selected by the observer, taken to be the independent variables. The phenomenon is indicated as Y, it represents the object of the study, it exists as a result of other factors. The 'lens' shows the possible significant factors that resulted for the existence of Y from the observer's (researcher's) position. The 'lens' is acting as a filter, to select what is considered to be the significant factor or factors that explain and predict the nature of the phenomenon under investigation.

As the 'lens' rotates to other positions, or at different times, facing other researchers, the significant factors may change, the Xs which determine the value of the Y, signifying the results of various perspectives of the researchers. What is significant for one researcher may not be the case for another researcher with a different perspective. The selection of Xs affects the result of the study. The 'lens' metaphor can also be taken to reflect the context in which the investigation is conducted where there are different contexts, different variables appearing to the observer to investigate the object under investigation.

The advantage of a theory is that it answers the queries of why, it explains and predicts a phenomenon. Theory matters greatly as it lends itself to be used in a variety of conditions and is used in a variety of disciplines. For example, Rogers' theory of innovation has been used to study diffusion in health, education, information systems, and marketing. In conclusion, using theory in research is beneficial when it is appropriate and fitting for the particular research context. It contributes to knowledge and also tests the existing theories or generates a new theory that fits the context and the phenomenon under consideration.



Adapted from Brunswik's lens model and from Amundson and Cummings, 1997.

Figure 4-1: Brunswik's Lens model adopted and presented by Amundson and Cummings

4.4 Theories on society, science and technology

This study focuses on the interaction of society and technology in general. It focuses on the adoption of ICT in society. This section firstly presents the theories that explain the relationship between technology and society. Secondly, it explores theories that explain the adoption and diffusion of technology in society. Thirdly, it investigates if existing theories explain the phenomenon under investigation.

One of the primary bodies of literature that examines the mutual interaction of society and science is the sociology of science. This is the study of science and its effects on social structures and processes of scientific activity (Ben-David, 1975). It focuses on how science as an institution looks into practices and ways of the carrier paths and rewards for the practitioners in the field (Pinch and Bijker, 1984).

According to Pinch and Bijker (1984) one of the main developments of the sociology of science is the extension of the sociology of knowledge into “hard science”. One of the main characteristics of sociology of knowledge is that scientific knowledge is socially constructed; this by its very nature provides multiple interpretations for the same phenomenon. Sociology of science investigates the cause of beliefs in society irrespective of the scientific claims of truth; the central tenets are: different explanations are not sought for what is known to be a scientific “truth” and also it is indifferent to the truth or falsehood of the belief. This is an issue of socially constructed beliefs, not an epistemological issue.

4.5 Social Construction of Technology (SCOT)

The central tenets of SCOT are: firstly, it advocates the mutual shaping of society and technology, social construction of artefacts by relevant social groups and also technological shaping of society. Secondly, various social groups can provide different meanings and attributes to the same artefacts. Thirdly, artefacts do not have inherent identities or attributes (Pinch and Bijker, 1984).

SCOT also shares its interpretation flexibility with the sociology of scientific knowledge. In addition, it focuses on a problem that arises on how an artefact is socially constructed. It argues that a certain social group constructs an artefact’s meaning and usage. The main assumption is that all members of the selected social group share common meaning of the same artefacts. The underpinning methodological and empirical studies for SCOT focus on the discovery, naming, understanding and describing of the relationship between the selected social group and the artefact. Furthermore, different social groups provide many interpretive ideas for the same artefact, opposing interpretations are tolerated (ibid).

There are inherent problematic issues with SCOT: it requires defining social groups for its study, there is a lack of clear demarcation among the relevant social groups. Furthermore, there is an assumption of the selected social group to share similar meaning and understanding of the same artefact; in these idealist settings, two different individuals in the selected social group have the same meaning and idea about an artefact. What is more is can there be absolute closure for an artefact. Which is a complete acceptance of the artefact meaning, interpretation, and what is above all providing the solution for the initial problem. The fulfilment of the designed aim of the artefact is verified by the agreement of the social group.

The technological frame forms the basis for analysing socio-technical ensembles; It is the method that facilitates technology, sways interaction and shapes specific cultures. It is a two way process; it also looks at how new technology is constructed by allowing and restricting interactions within specific social groups in certain channels.

4.6 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) is an information systems theory. Bagozzi et al (1992) argue that users accept and use new technology based on two measures, perceived usefulness and perceived ease of use. Davis (1989) explains perceived usefulness as the degree to which a person believes that using a particular system will benefit them in their job performance. In addition, perceived ease of use is the degree to which the use of the system would be free from effort. The advantage of this measure is its simplicity. The technology can have a multitude of capabilities, this is useful only if the users perceive that it is useful for their job.

However, TAM is criticised as having limited explanatory ability. It is not possible to predict using TAM if potential adopters will adopt a system based on perceived usefulness and ease of use (Chuttur 2009). Chuttur argues that TAM lacks any

practical value. Furthermore, adopters of technology are influenced by many factors; some of these factors include their ability to use the technology, its affordability and its compatibility with their value and culture.

4.7 Actor-Network Theory (ANT)

Actor-network theory is a social theory approach where humans and non-humans constitute parts of the social network. It is developed based on the work of Callon (1986), Latour (2005), and Law and Hassard (1999). It appears to share a number of attributes with SCOT, particularly in the mutual interaction and construction of society, technology and science. However, ANT is very different in its fundamental approach, especially in its human and non-human entities relationships.

SCOT takes constructivist approaches, where nature and reality are constructed through the mutual interaction of technology, science and society. In comparison, ANT recognises the existence of reality outside and independence of society and humans, which cannot be changed, but much cannot be said about nature without the participation and activity of humans. In this relationship, humans and non-humans are defined based on the relationship they form in the network; through this interaction, nature becomes meaningful.

When an interaction between humans and nature takes place, a relationship is formed between humans and things, and also humans and other humans; this forms a network. Each network has its configuration and relationship to other networks, it also defines the meaning, role and identity of the elements within it. It is in this setting that truth, meaning and understanding is defined for that particular network. This truth, meaning and understanding can be different for different networks; it is the version of reality for that network, in this setting no one can claim to have an independent reference point outside any network. The assertion “water boils at 100^0C” has dual characters, natural characteristics and human formation of concepts, measurements, tools, and so on. It is not possible to say

anything about this phenomenon without human interaction, not forgetting technology and science. The statement "water boils at 212^0F", even though this statement and the former assertion are similar, the latter statement has a different configuration of tools and network. This also shows that the construction of reality can be different for various networks.

The notion of object and subject is not separated in ANT; objects are defined by their relationships with other objects. In this myriad of relationships, the roll, value and attributes of the elements are determine based on the position they assume in the network. The object without its connection and association to other objects has no roll, value or attribute. This extends to humans and non-humans. As Law and Hassard (1999, p. 3) point out:

> *"Actor network theory is a ruthless application of semiotics. It tells that entities take their form and acquire their attributes as a result of their relations with other entities. In this scheme of things, entities have no inherent qualities: essentialist divisions are thrown on the bonfire of the dualisms. Truth and falsehood. Large and small. Agency and structure. Human and non-human. Before and after. knowledge and power. Context and content. Materiality and sociality. Activity and passivity. in one way or another. All of these divides have been rubbished in work undertaken in the name of actor-network theory. "*

ANT studies how science and technology integrate into society, how these intricate interactions of technology and society formed and stabilised, and how these interactions create networks of human and non-human agents, and waves of relationships among entities. ANT explores how networks of humans and non-humans are created, sustained or disintegrated. It does not investigate why networks are generated but it explores how the network is sustained or disintegrates.

The conceptual framework of ANT provides the foundations for selection of models and tools to enable a systematic way of gathering data and choice of

appropriate tools that are required to transform these data into information and knowledge. Latour summed this up in the following passage:

> *"The history of science is that of the many clever means of transforming whatever people do, sell and buy into something that can be modified gathered, archived, coded, recalculated and displayed"(Latour, 1987, p. 277).*

4.8 Rogers' diffusion of innovation theory

Rogers' (2003) diffusion of innovation theory is a social process whereby new innovations, ideas or practices are communicated through certain communication channels to a particular social group through time and as a result the innovation is adopted/rejected by individuals or organisations. The main four concepts of the theory are the innovation itself, the communication channel, time and the social system. The innovation characteristics that determine the rate of diffusion of adoption are its relative advantage, compatibility, complexity, trialability, and observability.

New innovations are everywhere, aimed at replacing the old or introduced as new in society, while some are accepted and diffused in society, others are rejected altogether and some are adopted and later replaced or rejected before being fully diffused in society. There are marked differences of diffusion of an innovation in different societies, because of variation of cultural and socio-economic factors.
How the innovation fits within the culture and value of a society is one of the determinant factors for the adoption or rejection of the innovation.

Many researchers argue that the perception of potential adopters of the characteristics of an innovation determine its adoption by individuals and later on its diffusion in society. For example, Davis (1989) argues that users' perceptions of ease of use and usefulness of an innovation are the prime reasons for the adoption or rejection of an innovation. Davis points out that perceived usefulness

is the degree to which an innovation is believed to enhance the job performance of an adopter. Perceived ease of use of an innovation is the perception of a user of how simple, easy, and effortless it is to use the innovation.

4.8.1 The innovation

According to Rogers (2003, p.11), an innovation is an idea, a practice or object perceived as new by an individual.

> *"An innovation is an idea, practice, or object that is perceived as new by an individual or other unit of adoption. It matters little, so far as human behaviour is concerned, whether or not an idea is objectively new as measured by lapse of time since its first use or discovery. The perceived newness of the idea for the individual determines his or her reaction to it. If the idea seems new to the individual, it is an innovation."*

Furthermore, one of the reasons for a higher rate of adoption of an innovation is positive perception, in terms of ease of use and usefulness of the innovation, towards the innovation by potential adopters. For example, Rogers (2003) and Greenhalgh et al (2004) raise the role of innovation characteristics such as relative advantages, compatibility, complexity, trialability, observability and reinvention as a determinate factors for the diffusion of the particular innovation.

Relative advantage

Rogers states that the relative advantage of an innovation is the degree to which an innovation is perceived to be better than what it is replacing. In other words, it is the degree to which a potential adopter will gain value from the adoption of a new innovation. In adoption literature, relative advantage is stated to be the most significant factor affecting the rate of adoption (Holak & Lehmann 1990) .

Cooper (1979) explains relative advantage as the uniqueness of features of the innovation to reduce cost, provide higher quality and/or the ability to better meet needs, or complete a task uniquely. Holak and Lehman (1990) show the relative advantage of an innovation as a means to save, generate efficiency, provide better

performance, product quality, regularity of reward, durability, price/quality relationship, savings of discomfort in use, mechanical advantage or physical appearance.

The adopter perceived usefulness and ease of use of an innovation measure the relative advantages of an innovation (Davis 1989). According to Davis this is the most significant factor for innovation adoption. This argument is supported by Huff and Munro (1989); they argued that computers are adopted as a result of favourable perceived usefulness and ease of use.

Compatibility

Compatibility refers to the degree to which an innovation fits into the existing value and experience of a potential adopter, its compatibility to a particular social group (Rogers 2003). The compatibility of the innovation with values and norms of society determines its acceptability in society. For an innovation to be adopted, it has to be compatible with the cultural values of society. According to Rogers (2003), if an innovation is not compatible with the existing values of a potential adopter, then the innovation will not be adopted as rapidly as an innovation that is compatible, or it will completely fail to be adopted.

Complexity

Complexity refers to the degree to which an innovation is perceived as difficult to use and understand (Rogers 2003) .The more complex an innovation the more likely that it will be adopted more slowly. When an innovation requires a higher level of knowledge, it excludes all potential adopters that lack the required technical knowledge. This in turn reduces the level of diffusion in society.

An innovation needs to be explained and communicated to potential adopters by others who have adopted and use the innovation, in most cases by opinion leaders. The more complex the innovation becomes the harder it becomes to

explain it or understand it. Hence, this creates a barrier for the diffusion of the innovation.

In many situations, adopters did not need to know the functional complexity of the innovation to use and understand it. There is some level of abstraction when communicating information to a potential adopter. For example, when a person learns how to drive car, he/she does not need to understand the complex interconnections and functions of various parts of the car, only the relevant information which is important to driving is provided, this is abstraction.

Trialability

Trialability is the level to which a potential adopter is able to experiment with the innovation. Potential adopters that gain some level of exposure tend to adopt the innovation. According to Rogers (2003) trialability of an innovation allows the user to test the innovation in the unique circumstances of the user's situation. This removes any doubts the potential adopter may have previously had; it also shows how the innovation meets or exceeds expectations. However, some innovations are not trialable for a number of reasons, for example: availability, accessibility, or because of the requirement of a high level of investment. These innovations are diffused more slowly than other innovations that can be tried easily by potential adopters.

Observability

Observability is the level of the result of an innovation or the innovation itself to be visible to a potential adopter (Rogers 2003). The higher the observability the more likely it is to stimulate discussion about the innovation, resulting in information and knowledge exchange, and the likelihood of persuasion will occur, increasing the possibility of adoption of the innovation. If the usefulness or advantages of an innovation are observable then the innovation tends to be more likely to be adopted. Some advantages are easily observable, for example, the advantages of

a mobile phone are easily observable when considering communicating anytime and anywhere.

Re-invention

Re-invention occurs after the innovation is adopted and the adopters use the innovation for a different purpose than what it was designed for.

Rogers (Rogers 2003, p. 17) defined re-invention as:

> *"the degree to which an innovation is changed or modified by a user in the process of its adoption and implementation"*

Sivapragasam (2010) has pointed out how users re-invent the missed call function of a mobile phone to send a message in five emerging Asian countries. In Tanzania, for example, the missed call functionality has been used to communicate without incurring any cost (Rajani 2010). As Rajani points out, residents who live far in the countryside in Tanzania make use of missed calls to get a motorbike rider to go to the nearest town. Re-invention depends on the innovation; some innovations may not lend themselves to re-invention. The innovation requires having some level of modifiable characteristics, which were not part of the initial design of the innovation, but are re-invented by adopters.

4.8.2 Communication channels

Communication channels are carriers of messages, created by individuals or organisations, and are used to send messages from its source to the intended receiver. Communication channels are categorised into three groups, interpersonal, mass communication, and social media. According to Rogers (2003), communication channels play an important role in the adoption process in two ways. The first is the exchange of information and knowledge about the innovation, the second is the persuasion of a potential adopter to adopt the new innovation. Interpersonal communication occurs between two individuals, this is a two-way communication, where one provides information, and the other may seek clarification about an innovation. Interpersonal communication uses various channels to communicate, such as face-to-face, letter, video conferencing, or

telephone. This communication category is best suited to persuading individuals to adopt an innovation for a number of reasons. Firstly, any uncertainty about the usefulness of the innovation and fitness for the purpose it is designed for is discussed and clarification offered. Secondly, at a person-to-person level there is some level of trust. The information is taken seriously.

The second category of communication, mass media, is a one-way communication channel, where information is generated by individuals, groups or organisations about an innovation. Mass media channels provide information and knowledge about the new innovation, creating the initial awareness of the existence of the new innovation and its usefulness. These media are used to communicate the information and knowledge to potential adopters.

The third communication channel is social media; this method of communication has a mix of characteristics of the above two categories, including person-to-mass media transmission, mass media, and person-to-person communication characteristics. In the social media environment information is generated by individual, groups or organisations. Furthermore, information is exchanged from multiple sources to multiple destinations. The effect of social media in disseminating information is well established (Stieglitz & Dang-Xuan 2013). Ma et al (2013) argue that, through opinion leaders, social media enable news diffusion in society. New social media have started to influence many aspects of the social sphere.

Time

According to Rogers (2003) time is one of the major factors that measures three important processes in the diffusion of innovation:

1. Time taken by an individual, in the innovation decision process, from the initial awareness of the innovation to the adoption or rejection of the innovation,

2. In the innovativeness of an individual or other unit of adopter – the relative earliness/lateness with which an innovation is adopted by the individuals compared to others in the system; and
3. In an innovation, the rate of adoption in a system is usually measured as the number of members of the system that adopt the innovation in a given time period.

An innovation decision process includes information seeking and information processing activity about the potential adoptable innovation; it is a search for possible advantages and disadvantages before adoption.

The innovation decision process

The innovation decision process, as shown in Figure 4-2 below, has five stages. The first is the knowledge stage, this is the stage where a potential adopter is aware of the new innovation and has acquired some level of knowledge about it. The second stage is the persuasion stage; in this stage, the potential adopter is persuaded to adopt or reject the innovation. The third stage is the decision stage where the potential adopter makes a decision to adopt or reject the innovation. The fourth stage, the implementation stage, is where the innovation is put to use. The last stage of the innovation process is the confirmation stage. In this stage the adopter decides to continue to use the innovation or discontinue using it as a result of dissatisfaction.

Rogers indicates that there are three main ways in which innovation decisions are made. The first is the optional innovation-decision; the decision is made by an individual or organisation irrespective of the decisions of others to adopt or reject an idea or an innovation. The second is the collective innovation-decision, whereby individuals in certain social or other groups make a collective decision to adopt or reject an innovation. The third is authority innovation-decision, these innovation decisions are made by a few individuals who possess power, authority or have technical expertise. There are various combinations of the three ways of decision making, that is to say, where once an authority innovation-decision is

made it will be followed by a collective or optional innovation-decision. Furthermore, the influence of the adopted innovation, the effect, and changes in individuals, organisation, or social systems influences others to adopt the innovation.

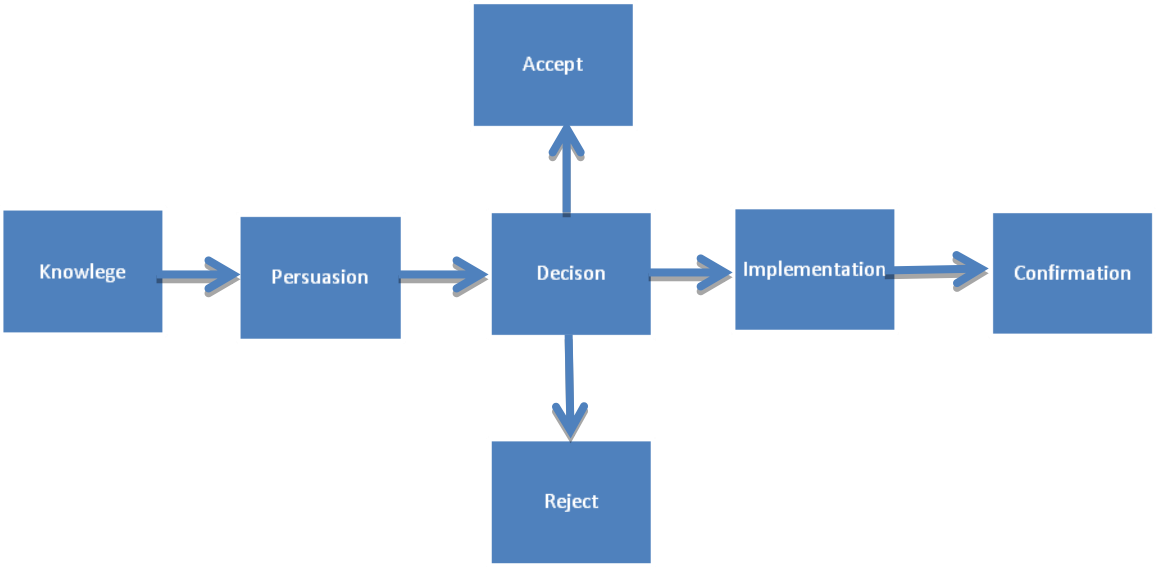


Figure 4-2 Rogers' five stages in the decision of innovation adoption processes

Potential adopters are classified into groups based on the time it takes them to adopt an innovation. There are five adopter categories. The first adopters of the innovation, according to Rogers (2003), are known as innovators. Innovativeness is the degree to which an individual adopts an innovation earlier than others in the social system. As Rogers points out, innovators have access to accurate information from engineers and scientists, generally have cosmopolitan social relationships, are younger, and belong to the highest social classes. They have a stable financial base, exhibit a high degree of copying mechanism of uncertainty about an innovation, they have the financial resources to absorb any lose that resulted as a consequence of adopting an innovation that has failed to be diffused in society. They represent 2.5% of the total population of possible adopters.

Early adopters account for 13.5% of the population of possible adopters. According to Rogers (2003) this adopter category has the highest number of opinion leaders. Other potential adopters ask early adopters for advice and information about the innovation. Early adopters have higher social status, they have more financial power, are mainly younger in age and have a higher level of education that gives them the ability to understand complex technical ideas and concepts. The consequence is that they are more suited and better-informed to make an informed decision to adopt or reject an innovation.

The third category, the early majority, consists of 34% of the possible adopters in the social group. They are generally followers rather than leaders in the adoption process. They have above average social status, and to avoid risk they seek confirmation from individuals or organisations that have already adopted and experimented with the innovation. Therefore, it takes them a longer time to make a decision to adopt, when compared with innovators and early adopters.

The fourth category, the late majority, consists of 34% of possible adopters in society. This group of adopters belong to a below average social status group, as a result the group exercises very little opinion leadership. The group also has very limited financial assets. They are generally sceptical and cautious of adopting innovation. They adopt only when the innovation is well established.

The fifth adopter category is the laggards, with 16% of possible adopters in society. This group mainly tends to be older, has the lowest social status and limited financial assets. This group mainly has contact with family and friends, exercises a high level of resistance to change, shows little or no opinion leadership and is the last to adopt an innovation.

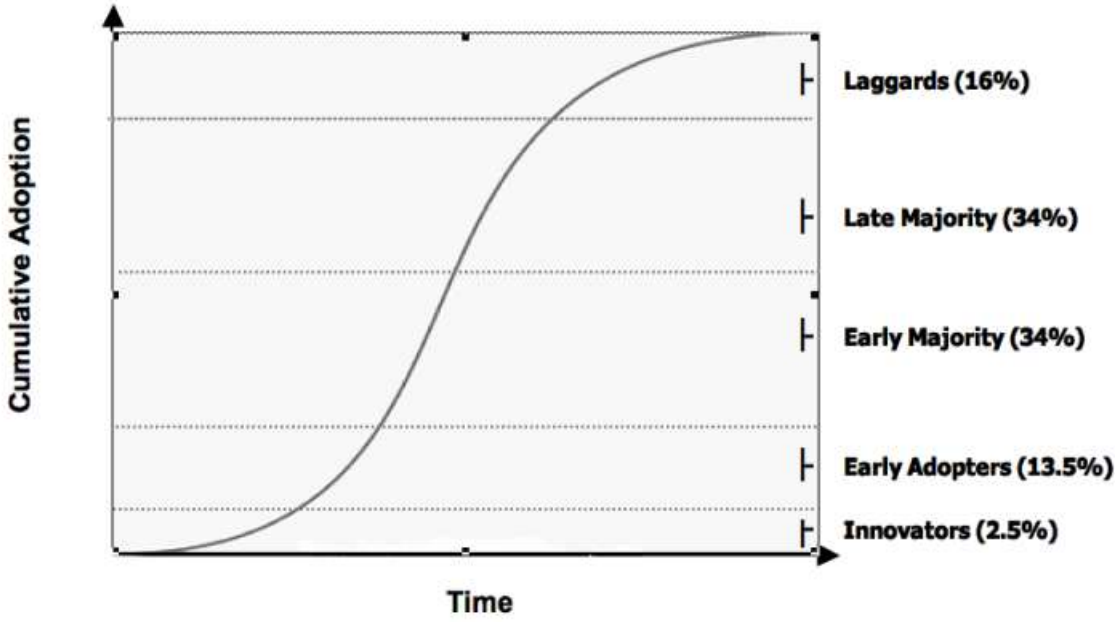


Figure 4-3 : Adopted from Rogers, S-shaped diffusion of innovation curve

4.8.3 The social system

Rogers (2003) defined a social system as an organised system functioning as a single unit to solve a joint problem. Social systems can be individuals, informal groups or organisations. In this organised system, there are established relationships among the members. These relationships define the role of individuals, organisations, or groups; some are opinion leaders while others are followers.

Opinion leaders are influential in informing, persuading, and guiding their followers in issues that concern the social system, and the contribution and role of individuals or organisation. Opinion leaders may not fully present information to their followers. Information is not of equal value; some is more valuable than others and some carries risks (Chatman 1996). Opinion leaders have unquestionable influence on their followers. According to Wilson (1983), people trust them, consider them to be honest, as a result their opinions are sought. Similarly, Rogers and Beal (1957-1958) argue that opinion leaders have a positive

influence on the acceptance of change because of their effective communication ability and trustworthiness. Van Eck et al (2011) go on further and state that opinion leaders speed up the response behaviour of potential adopters. They are a focal point for communicating and initiating new ideas, have knowledge that is more accurate, less susceptible to existing norm, and are more innovative. The three main types of innovation decisions occur in a social system where opinion leaders play a critical role in the adoption or rejection of an innovation.

4.9 Selection of theoretical framework

In the study of the diffusion of innovation, researchers have many theories at their disposal, but there are difficulties in choosing the appropriate theory for the proposed research. The properly selected theory enables the formulation of the research constructs. Although the selection of research method depends on the nature of the problem under investigation, the selected theory has an impact on the research method.

Truex et al (2006) formulated some criteria on how to choose the appropriate theory for research, which include:

1. Best fit between the selected theory and the research phenomenon of interest;
2. The theory's historical context;
3. The impact of the selected theory on the choice of research method;
4. Consideration of the theorising process and the cumulative theory.

Using the above criteria, the applicability of diffusion theories that explain the problem under investigation and the research context are explored. The theories of Social Construction of Technology, Technology Acceptance Model, Actor-Network Theory, and Rogers' Diffusion Theory were explored to find the best fit between the theory and the study of ICT adoption in Addis Ababa, Ethiopia. After careful consideration, Rogers' diffusion of innovation theory was found to be the best fit for the research phenomenon of interest.

4.10 Reasons for the adoption of Rogers' diffusion of innovation theory

Rogers's diffusion of innovation theory explains how an innovation is diffused in society. It focuses on the individual adopter and the influence of culture on the adopter to accept or reject an innovation. Looking closely at Rogers' diffusion of innovation theory, and the problem under investigation, it appears that the theory is a good fit for the investigation in two ways. Firstly, the theory explains how the individual adopters go through the five stages of the adoption process to adopt ICT in their hotel and tour operator businesses. Secondly, the five factors of innovation adoption identified by the theory at least partially affect the diffusion process. In addition, the theory is widely used in diffusion studies in various academic fields such as politics, economics, and information systems.

It has been used in many similar studies and has been applied in many different fields and various social economic conditions. For example, it has been applied to a number of related studies such as ICT diffusion in agricultural research in Kenya (Kiplang'at and Ocholla, 2005), and technology adoption by small scale farmers in Kenya (Nyariki 2011). Rogers' theory was used to study the adoption of technology in education (Roberts et al. 2007) and ICT in library and information science education in sub-Saharan Africa (Minishi-Majanja 2007). Rogers' diffusion of innovation theory is the most appropriate for investigating the adoption of ICT.

The theory does not provide the means to accelerate adoption nor does it predict outcome of the diffusion process. Besides there is also the question about the extent to which the theory formulates a hypothesis that is readily refutable. Nevertheless, the broad framework of the theory presents a platform for researching diffusion of ICT in social systems such as those in developing countries.

Rogers develops his theory of diffusion in different socio-economic settings when compared to developing countries. Rogers argued that innovation diffusion researchers in developing countries should focus on equity rather than on innovation diffusion (Rogers, 2003). Many African researchers agree that more emphasis needs to be given to equity rather than to diffusion study as cited by Kiplang'at and Ocholla (2005). It is not ICT as an innovation that matters, rather it is the socio-economic factors compounded by human resource capacity, politics and culture that have a great effect on the diffusion process. Kiplang'at and Ocholla (2005) emphasise the need for further study on the effect of socio-economic, human resource, political and cultural factors for diffusion of ICT in developing countries.

This is also argued by Padel (2001), that the social and economic context under which adopters function has a critical role on the outcome of the diffusion process. The implication of this argument and the recommendation by Kiplang'at and Ocholla (2005) are that the context in which diffusion happens is critical, the adopters do not operate in a vacuum, and the unfavourable context in which adopters operate, particularly in the case of developing countries such as Ethiopia, has a detrimental effect on the outcome of diffusion of innovation. For example, in Ethiopia, because of government policy, the telecommunications sector has only one service provider; as result of this and other PESCTL factors, adoption of ICT is negatively influenced. In the context of Ethiopia, where adoption of ICT is highly influenced by government policies such as taxation, human resource, and economic policies, to ignore these facts and only focus on personal characteristics is simply to grossly simplify the adoption process and ignore major factors in the innovation and diffusion study.

The main factor for this shortcoming of the theory lies in its historical context; it was developed in a different socio-economic context compared to the research that this study is based on. The theory was developed in a free market economy where market forces determine the availability and price of an innovation.

Whereas, for example, in developing countries like Ethiopia, where political decisions are taken to run the telecommunications service by a monopoly, a government owned company, this affects the availability and pricing of telecommunications services. This in turn affects the diffusion of ICT in the hotel and tour operator business. At least in the case of this research, political decisions affect the diffusion of ICT.

4.11 Limitation of Rogers' diffusion of innovation theory

The limitation of this theory is noted by Rogers and Shoemaker (1971) as early as 1971 especially its bias towards a pro-innovation stance, that the assumption of new innovations has positive outcomes and needs to be diffused and adopted by all members of social groups. Other notable limitations noted by Rogers and Shoemaker include individual-blame bias, recall problem, and issues of equality. Furthermore, the theory does not explain the political and economic factors that affect the diffusion of ICT.

4.12 Assumptions of Rogers' diffusion of innovation theory and its implications

- The individual free will to adopt or reject the innovation is the prime assumption;
- In developing countries there are other factors that affect the diffusion processes, such as PESCTEL factors which play a critical role;
- In addition, the role of the dynamics of the diffusion of innovations in organisations requires additional assumptions such as size and the sector the organisation belongs to.

4.13 Rationale for new theoretical framework

Diffusion of innovation is affected by many factors. The literature on diffusion indicates that there are internal and external factors. The internal factors arise

from the characteristics of potential adopters, such as education, age, attitude to innovation, social status and financial ability. In the case of an organisation, its characteristics such as size, available skills set and the attitude of owners/managers to new information are some of the factors that affect adoption.

The external factors arise from the local context, the potential adopters, where the individuals or organisations do not control it. The main sources of external factors are the PESCTEL of the national context and the international influence that affect the national context. These external factors play a significant role in influencing the adoption of ICTs.

Rogers (2003) diffusion of innovation theory points out that the independent variables of diffusion are: the individual characteristics, the innovation characteristics and the social system. However, other nation-wide policies that arise from the political, economic, cultural, environmental and legal factors play a significant role in the adoption process. In addition, international level factors have different effects on different countries but have more pronounced effects on developing countries than developed countries. The policies originating from the national factors, PESCTEL, create diffusion facilitating and resistance factors for the adoption of ICT.

Cavusoglu et al (2010) argue that opponents of diffusion are key players in the diffusion or rejection of new innovations. In fact, the diffusion opponents are as important as the adopters to shade light on the factors that affect the diffusion process (Mokyr, 1992). The effect of PESCTEL factors were presented in Chapter 3 section 3.7. The influence of these factors is more pronounced in non-democratic countries. In these countries, there is no mechanism to facilitate change of policies except when it arises from the self-interest of incumbent governments. As was presented earlier in Chapter 3, in democratic countries, policies are influenced by various interest groups.

To include all the major factors and investigate their effects on the diffusion process, the researcher proposes to add two elements on Rogers' diffusion of innovation theory: diffusion facilitator agents and diffusion resistance agents arising from the PESCTEL factors. This will shed light on how the macro factors, PESCTEL, act as facilitators or resistance agents that influence adopters, non-adopters, and opponents.

4.14 Development of a theoretical framework

Rogers' diffusion of innovation theory focuses on the user, and the innovation characteristics on the adoption process. However, the literature indicates that there are resistance and facilitator diffusion agents caused by PESCTEL factors. Hence, individuals or organisations face diffusion resistance agents and diffusion facilitator agents. To include these factors, both resistance and facilitator agents caused by PESCTEL factors should be included in the theoretical framework to gain insight into the adoption/rejection process. The researcher proposes to add two elements to Rogers' diffusion of innovation theory, namely, diffusion facilitator and diffusion resistance agents caused by PESCTEL factors. This will shed light on how the macro factors, PESCTEL, act as facilitators or resistance agents, which go on to influence adopters and non-adopters.

The result of the balance of power between facilitator and resistance agents creates the condition in the social system for the acceptance or rejection of the innovation for the particular social group. Diffusion facilitator and resistance agents affect different social groups differently. This shows that diffusion is a complex process. Furthermore, changes in socio-economic conditions can result in changes of the role of facilitators and resistance agents, which may result in resistance agents becoming facilitators or vice versa. Diffusion of innovation is a dynamic phenomenon; the diffused or rejected innovation also has an influence on changing facilitator and resistant agents.

Figure 4-4: Source of diffusion of innovation factors that influence adoption

The three main areas of sources of factors that influence the adoption of innovation are:

- Organisational and individual characteristics that influence adoption;
- National level factors (PESCTEL);
- International level factors.

As shown in Figure 4-4 above, potential adopters of innovation (individuals and organisations) are affected by three main factors. The first is the characteristics of individuals or organisation, the second is the national level factors (PESCTEL) and the third is the international levels factors.In this study, the effects of international, national, organisational, and individual factors are used to formulate the theoretical framework. The organisational and individual level factors are modelled by Rogers' diffusion of innovation theory, while international and national level factors are included in the proposed theoretical framework.

4.15 Proposed theoretical framework for diffusion studies

The researcher proposes a diffusion model based on Rogers' diffusion of innovation theory. The proposed basic model for depicting the ICT diffusion process is shown in Figure 4-5 below. The model shows the role of PESCTEL as facilitator and resistance agents for the diffusion study. The overall level and intensity of influence of these agents determine the diffusion of ICT by individuals and organisations. In turn, the diffused or rejected innovation has an impact on the PESCTEL factors.

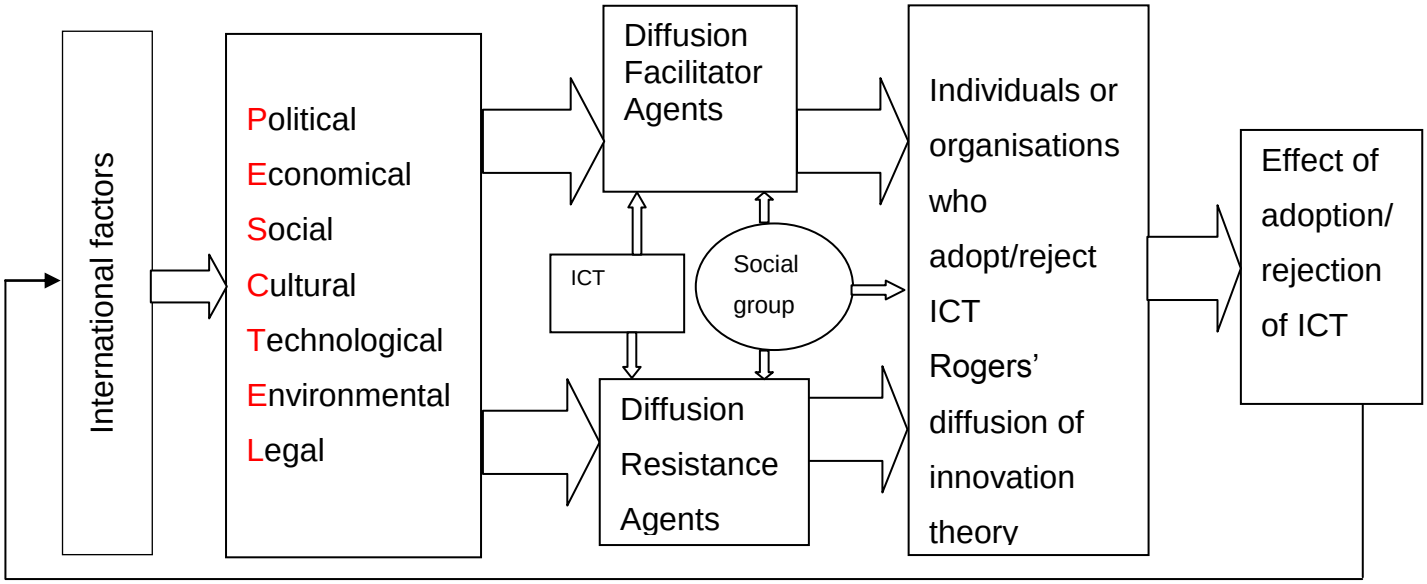


Figure 4-5 Diffusion Model, based on Rogers' diffusion of innovation theory

4.16 Conclusion

This chapter explores the need for using a theory for research. Theory simplifies the complex real world by looking at the main factors that provide insight into the phenomenon under investigation. The use of theory in research provides two advantages: it proves or falsifies the theory and it lends itself to be used in other academic disciplines.

It explores many theories, including SCOT, TAM, ANT and Rogers' theory of diffusion that provides insight into the adoption and diffusion of technology in society. Rogers' diffusion of innovation theory is found to explain (at least partially) the adoption of ICT in the hotel and tour operator business in Addis Ababa, Ethiopia.

However, the researcher argues that there are other factors that influence the adoption of ICT that are not explained by Rogers' diffusion of innovation theory. These factors arise from local PESCTEL and international level factors. It was also proposed that these factors create diffusion facilitator and resistance agents that affect different social groups differently, it also affect the adoption or rejection of ICT.

The proposed theoretical framework provides the framework for the design of the research methodology. In the next chapter, the research method shows how the study progressed to the design of research methods, data collection and analysis, including the ethical issues observed during data collection.

Chapter 5 Research methodology

5.1 Introduction

This chapter presents the research method of the study. It firstly presents how the appropriate methods that reflect the context on the ground were selected and how they were guided by the research problem and research questions. It also discusses how the context on the ground guided the selection of the unit of analysis and the data collection strategy. It then presents the problems encountered before and during data collection, including the lessons learned. Finally, it presents some of the ethical issues raised.

5.2 Philosophical underpinning of knowledge generation

At the beginning of the research process, a number of research methods were considered to guide the data collection and analysis strategy, including case study, comparative study, survey, participant observation, and exploratory research methods. The exploratory research method was selected to guide the research process for the following reasons:

- Innovation diffusion has been well researched in developed countries, however, the ICT diffusion phenomenon is not researched in the hotel and tour operator business in Addis Ababa;
- The full range of the research context and setting is not known;
- The existing literature did not provide an explanation of the relationships between the adoption/rejection of ICT and the factors that influence these processes.

When there is no clarity of the research context, including the research focus, the exploratory research method is found to be appropriate (David & Sutton 2011). The exploratory research method has been off the radar in much social research literature, and it has not been widely used (Stebbins 2011). However, its popularity is growing. Sarandakos (2005) points out that exploratory research is conducted

when there is a lack of sufficient information about the topic, and goes on to state that such exploratory studies may show if the topic is worthwhile or feasible or used to familiarise the researcher with the context and guide the selection of data elicitation method to be used.

Marshall and Rossman (1999) provide a rationale for the use of the exploration method. It is one of the main aims of research, the other three are explanation, description and prediction. Creswell (2003) goes on to explain the application of the exploratory method in two phases. For example, the first can be a qualitative stage followed by a quantitative phase. He then states that the aim of the first phase is to explore the phenomenon under study, develop and test the data collecting instrument, and use the result to develop the quantitative phase. This is a mixed method research approach.

This mixed method approach is not without controversy. The use of qualitative and quantitative methods in the same research brings epistemological issues. The different approaches to understanding and making sense of the social world by a positivist (quantitative) and a constructivist (qualitative) vary in their fundamental conceptualisation. The positivist approach indicates that knowledge exists outside the control of humans, while the constructivist assumption is that knowledge is a result of construction by human beings. There is intense debate regarding the use of these different methods in a single piece of research. Denzin and Lincoln (2005) argue that it would not be appropriate to use both qualitative and quantitative methods in the same enquiry because of different paradigmatic assumptions.

Creswell and Piano Clark (2007) pointed out four world views used in research. The first is Postpositivism, which is based on quantitative approaches focusing on the search for causes and effects. The second, Constructivism, is based on a qualitative approach, from an individual perspective to a theme or a pattern and finally to a theory. In this worldview multiple views are tolerated. The third is Advocacy and participatory worldview. In this worldview a qualitative approach is

used, it focuses on issues such as empowerment and marginalisation. The researcher collaborates with marginalised groups and the aim is to change the social world for the better. The fourth is Pragmatism worldview. This worldview is based on a mixed methods approach. The focus of this worldview is on the research question raised rather than on the methods employed. Multiple methods of data collection are used in an attempt to gain knowledge.

Other researchers (Ridenour & Newman 2008, Teddlie & Tashakkori 2009) argue that the use of mixed methods research is advantageous in a number of ways: qualitative and quantitative methods provide better or stronger inferences than the single method. The qualitative method provides, reach narratives, deep insights into the phenomenon under study. The quantitative method provides breadth to a study by providing data from a much larger sample, and from various focused areas of key aspects of the phenomenon not covered in the qualitative method. The use of mixed methods can provide better inferences (Venkatesh et al. 2013). The most important advantage of this method is its ability to provide triangulation of qualitative and quantitative data to develop a deeper understanding of the phenomenon under investigation (Denzin 2006, Silverman 2005, Stake 1996). Mixed methods enable minimisation of non-overlapping disadvantages that are inherent in each method, their strength lies in the use of the corresponding advantages of both systems.

In recent times, mixed methods research has been accepted as an alternative research method in many fields. Despite its complexity, it has been argued that it is possible to conduct research that uses multiple methodologies and paradigms (Mingers 2001, Ridenour & Newman 2008, Teddlie & Tashakkori 2009). Furthermore, John Mingers (2001, p. 243) puts it as “Paradigms are simply constructs of our thought. To hold that the world must actually conform to one of them is to commit the epistemic fallacy. The world is almost certainly more complex than we do, or possibly can, know.”

5.3 Mixed methods design strategy

Many scholars have suggested two mixed methods strategies; the most widely used are concurrent and sequential (Creswell et al. 2003). In sequential design, qualitative and quantitative data are collected and analysed in different phases of the research, the results are implemented in different phases. In concurrent design, qualitative and quantitative data are collected and analysed at the same time, then the two are merged to provide a complete understanding of the phenomenon under study.

The choice of concurrent or sequential research strategy mainly depends on the phenomenon under investigation. In the case of this research, where the findings of the first qualitative study inform the second phase, the sequential method is used. The adoption of ICTs in the selected sector(s) provides insight into what factors facilitate the adoption including the role of stakeholders. The existing secondary data and literature review indicate that the adoption of ICTs in Addis Ababa is very low. The results of the qualitative study are expected to provide insight into the main issues of adoption. The quantitative study is geared to looking into the factors that act as a facilitator and also as a barrier for adoption. In this investigation of the adoption/non-adoption of ICTs in the selected sector(s), the sequential study is found to be appropriate.

5.4 Research approaches

Exploratory design methodology is used to inform the research process and journey. The research design uses Berg's (2007) Spiralling Research Approach, shown below in Figure 5-1, a forward and backward movement of processes in each stage of the research; for example, from idea to theory and back again, from theory to modify the idea, or from design to data collection or vice-versa, from analysis to dissemination, and so on and so forth. The process, in its formulation, provides refining of ideas, theories, method, data collection, analysis and

dissemination. This particular research method enables the proposal of the theoretical framework that guides the data collection, analysis and dissemination of the research.

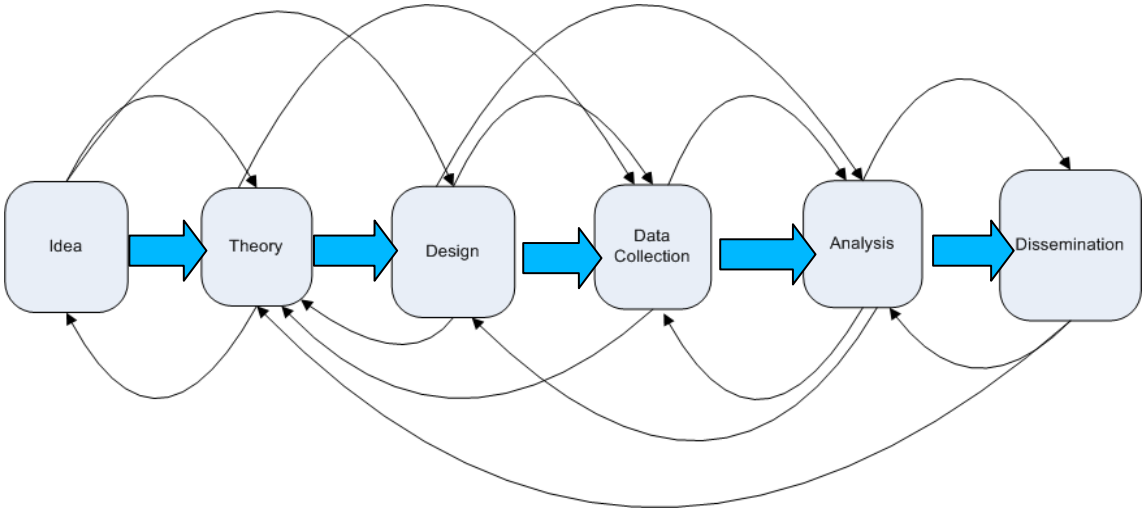


Figure 5-1: The Spiralling Research Approach adopted from Berg

5.5 Initial exploration of the research context

An initial literature review indicates that there are no significant studies conducted on the adoption of ICTs by SMBEs in Addis Ababa, Ethiopia. An initial exploration of the context on the ground becomes essential to prepare who will participate in the research, to find out who the stakeholders are that influence the adoption of ICT, and to establish initial contact to facilitate future data collection. A preliminary list of three groups was prepared: the first group includes the main stakeholders in adopting ICTs, the second group includes SMBEs that provide insights into the adoption of ICTs in these organisations, and the third group includes research centres that would provide insights into the current research states of ICT in Addis Ababa.

The first exploratory field visit, which was conducted between 12th and 24th April 2009, see Table 5-1, visited the three groups. The first stakeholders group includes:

- Ethiopian Telecommunications Corporation (ETC)
- Ethiopian Telecommunications Authority (ETA), (telecommunication regulator)
- ICT for Development Agency
- Ministry of Finance and Development (MFD)
- Ethiopian Central Statistical Agency
- Micro and Small Enterprise Development Agency (MSEDA)
- Ministry of Culture and Tourism
- Addis Ababa Chamber of Commerce (AACC)

The aims were to get a sense of the impact the stakeholders have on the diffusion of ICTs, to find out how willing the organisations would be to participate in the research and to establish personal contacts.

The second group visited during the first fieldwork also includes small and micro-size business enterprises from different sectors of the economy:

- manufacturing (five)
- retail (four)
- hotels (five)
- tourism (four) and
- education (three)

The aims were to find the level of ICT adoption in different sectors of the economy, to find the likelihood of the willingness of owners/managers to participate in the research and to form personal contacts. There was a notable difference in the level of willingness to participate between the private and public sector – getting the public sector to participate in the research proved to be challenging, although some public organisations provided limited cooperation.

The third group visited includes research centres:

- Addis Ababa University
- Forum for Social Studies
- Ethiopian Telecommunications Institute.

The aims were to explore the existing level of ICT adoption research and to find out what issues of ethical consideration are important when researching in the country.

The following criteria were used to help determine the sector(s) to be included in the research:

- The likelihood of cooperation of key informants in organisations;
- The adoption and use of ICT in the sector, particularly the Internet and mobile phone, computers, and wireless systems;
- The use of applications requiring adoption of ICT systems that support the business, for example accounting and payroll; and
- A population that includes non-adopters of ICT in their businesses, in order to get insight into resistance factors.

The field visit indicated that the hotel and tour operator business enterprises adopt ICT more than other sectors. Furthermore, these small and micro hotel establishments have both adopters and non-adopters of ICT. These provide a good mix of participants to find out the factors that facilitate adoption and the resistance factors that hinder the adoption of ICT. Many of the small hotels and tour operators are owned and operated by private owners. It seemed likely that there would be sufficient participants to conduct a survey.

In addition, the researcher has worked in the School of Hospitality and Tourism for more than 10 years as an IT Manager and has a good grasp of what ICT software

and systems are used in the industry. Furthermore, he has access to experts in the hospitality and tourism sector.

A second field visit was conducted (21/12/2009 to 10/01/2010), see Table 5-1. It aimed to build on the progress gained during the first field visit, to establish contacts and seek participation from stakeholders and hoteliers to participate in the coming interviews. The researcher searched for contact addresses of hotels located in Addis Ababa. Fifty-five hotel addresses, e-mails and telephone numbers were compiled from travel guidebooks, websites of international organisations, yellow pages, and hotel websites.

The researcher sent 55 e-mails to owners/managers of hotels requesting participation in the proposed research, and received only four e-mails from those willing to participate. The researcher then made a number of telephone calls to hotels to speak to owners/managers. Even though the researcher speaks the local language, Amharic, this did not result in any participants. To facilitate the recruitment process of participants for the research, a letter of introduction was prepared by the researcher's supervisor, Dr Anthony Olden, as shown in Appendix C, the letter was presented to potential participants when seeking cooperation.

After travelling to Addis Ababa, the researcher visited 52 hotels in person. As a result, 29 owners or managers agreed to be interviewed, one declined. For the remaining 22 hoteliers, although the researcher made repeated visits, the researcher was unable to meet the owners/managers to secure cooperation.

One of the managers who agreed remarked that he had received the e-mail request two months earlier. He went back to his office and returned after a few minutes and said he had just replied to it. Face-to-face approaches were found to be effective in convincing potential participants. On the other hand, owners/managers have no regular working hours, when they can be found in their offices. Furthermore, diaries are not much in use. It often took two, three, or more

visits before the interview took place. Not everyone who agreed to participate in an interview actually did so because of personal commitments, or simply because they changed their mind. In one particular case three meetings were arranged: at the first the manager did not turn up, at the second he said he did not have the 30 minutes to spare and at the third he again did not turn up. Facing such research obstacles is not an isolated problem. For example, Olden (1999) got no response from a Somali refugee association in London. The researcher also personally contacted stakeholders and seven government agencies requesting them to participate; only the ICT for development agency agreed to be interviewed, the rest declined.

There were difficulties in securing participation of these key stakeholders. To find possible solutions to this difficulty and continue the research, the research plan had to be revisited and modified to get sufficient data from participants.

The lack of cooperation from government organisations and agencies also created difficult conditions for gathering data from these key informants. There were a number of serious issues raised by individuals in these organisations. These were raised ethical issues that needed to be addressed. The issues raised by the participants were:

- The research process was seen as an assessment of the organisation and by implication it was taken to be an assessment of the participants ;
- There was an implication that the opinion of the participant could be taken as a criticism of the government – there was a real or assumed risk of loss of employment or other undesirable consequences for the participants;
- Managers that were in a position to provide data, in most cases, referred the request to their senior managers.

In many cases, the researcher was referred to liaise with public relations managers. These managers act as gatekeepers to allow what they think is appropriate or deny if they think it will cause some kind of negative publicity for the organisations.

The strategy used by these managers to deny access varied from organisation to organisation, and could be summarised as follows:

- dictate what the interview should focus on – as one manager states

  > "The interview has to focus on only operational matters of the ICT issues of the organisation. If you want to conduct research on issues of ICT policy then you have to go to the Minister's office"

- Other managers stated that they would cooperate and facilitate the interview and would call the researcher after arranging an appointment with the manager. However, the arrangement was never made, even though repeated requests were made, the response was always the same, that they would contact you in due course. The interview was never organised and never took place.
- Some other managers made unnecessary demands on the researcher, creating situations that were impossible to facilitate – in one particular case the researcher was requested to bring a letter of cooperation from the British Embassy in Addis Ababa, and also from the Ethiopian Embassy in London. In addition, there were requests for the researcher to provide a copy of his passport address in England, to present all the research questions, to prepare and submit a full report on the aims of the interview and finally to provide a copy of the thesis.
- Other groups of managers simply refused to participate in the interview.

Reluctance to participate was not limited to a few organisations but it was apparent across the board, and was more pronounced in government organisations. Freedom of expression is very limited, particularly if it is considered to be a criticism of the government. Opinions and comments can be taken out of context and can result in termination of employment or, in the worst case, being sent to prison. For these reasons, many employees in government organisations

avoided participating in the research. Furthermore, it is difficult to know how one's opinion might be judged by government officials in changing circumstances.

The researcher approached three research institutions to find out the extent of ICT research conducted. Understandably, there was an awareness of the importance of participation in research in these research institutions, hence there was full cooperation. Their hospitality, openness and willingness to help provided an insight into the cultural and ethical issues that is experienced by researchers. The researchers provided not only what has been done so far with regard to ICTs' diffusion research, but also their personal experience of doing research in the country. The results of the visits to the research institutions produced two results: firstly, it showed that no significant research had been conducted regarding ICT diffusion in Addis Ababa. Secondly, it revealed the cultural differences in the giving of consent and other sensitive areas that required careful consideration. The detailed ethical dimensions are presented in section 5.18 .

The researchers also indicated that careful consideration had to be exercised when collecting data regarding the profit of an organisation or individual income. In previous cases, researchers were mistaken for employees of the tax office of the government or at least a suspicion that the data may be used for tax collecting purposes. To get around this problem, researchers collect details of the expenditure of the individual and from that estimate the level of income. Although this is one way of solving the problem it is still difficult to apply it to an organisational level.

The barriers to securing research participants from government organisations and hotels in Addis Ababa were found to be challenging. These difficulties and challenges were presented in a journal paper published by the researcher and researcher supervisor, Dr Anthony Olden, and presented in Appendix O (Demeke & Olden 2012).

The second exploratory visit resulted in:

- Twenty nine hoteliers agreeing to be interviewed;
- All government agencies declined to be interviewed;
- The researcher gained insight on how one has to be sensitive to the local context and culture when conducting research.

5.6 Research design

This research uses a mixed methods strategy for collecting data in two phases. The research design aimed to collect data that would provide answers to the research questions, informed by the theoretical framework. In research where there is no significant literature to indicate the constructs or main factors, the chosen method has to be able to explore the context on the ground.

Quite often focus groups are used to get a sense of what people are thinking before the research gets to the stage of drawing up a questionnaire. In this research however, a focus group would have been very difficult to arrange (no one would have come). The decision was taken to explore the issues and concerns through interviews. To understand the problems and issues of adoption of ICT, the first phase planned to conduct interviews from the selected sector(s).

In this phase, the aim was to use in-depth interviews to collect data. In the second phase, quantitative and qualitative data collection using surveys was aimed at collecting data from both adopters and non-adopters in the selected sector(s). The core tenets of this research were to find the facilitator and resistance agents of the adoption/rejection of ICTs from a selected sector(s), and to find the sources of these agents. The initial research plan aimed to collect data from stakeholders and from participants in the selected sector(s). In the first phase, as shown below in Figure 5-2, the intention was to collect data from the owners/managers of business enterprises in the selected sector(s) who had adopted ICTs, and stakeholders, using semi-structured interview questions as shown in Appendix D.

The first field visit and the existing literature on ICT diffusion in Addis Ababa indicate that there is very little background literature to guide the research. The first phase of data collection aimed to close this gap. The first phase used interviews to help fill the gap of knowledge and understanding to collect the data (David & Sutton 2011). The research design relied on the proposed theoretical framework developed in the previous chapter. The core idea was the identification of those factors that influence the adoption and non-adoption of ICT. It also aimed to identify the sources of these factors that are primary sources of adoption and non-adoption.

The interviews were semi-structured questionnaires with eight sections:

- Demographic data;
- Hotel characteristics;
- ICT adoption;
- ICT usage;
- Problems encountered;
- ICT impact;
- Information seeking using ICT and;
- Satisfaction with ICT

The purpose of this was to find which ICTs were adopted, the level of usage, impact including problem encountered and information seeking behaviour of the hotel and tour operator owners/managers. Furthermore, to find solutions and turnarounds used to overcome difficulties encountered on the adoption and use of ICT.

Period	Purpose	Outcome
12/04/2009-24/04/2009	Exploratory visit by the researcher	Explore the adoption of ICT by various sectors of the economy, visited stakeholders and research centres.
21/12/2009-10/01/2010	Seeking research participants	Visited 52 hotels, and stakeholders seeking cooperation, 29 hoteliers agree to participants, government agencies declined to participate.
13/06/2010-3/07/2010	Data collection by researcher	In-depth interviews with 16 hoteliers
5/09/2011-23/09/2011	Data collection by researcher and research assistant	Data collected from 34 hoteliers and 11 tour operators
23/09/2011-27/12/2011	Data collection by researcher's assistant Mr Girma Leggese	Data collected from 94 hoteliers and 47 tour operators

Table 5-1 Data collection in Ethiopia

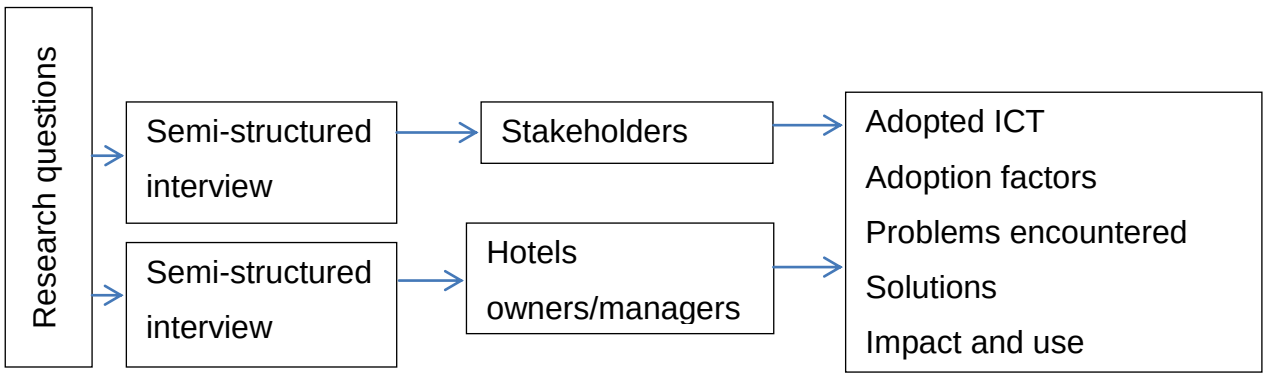


Figure 5-2 First phase data collection framework

The aim of the second phase was to conduct surveys with the owners/managers of hotels and tour operators and stakeholders. When an individual adopts or

rejects ICT, it is assumed that the individual might have more than one reason that informs the adoption decision. The intention was to identify these factors. However, it was also assumed that there would be one dominant factor that would inform the decision of potential adopters. In this research, the questionnaires were designed to collect data on both the major and the minor factors that influence the potential adopter to arrive at a decision. The survey aimed to collect data to answer the research questions. The data-collection instrument was a semi-structured questionnaire. It had seven sections:

- Demographic;
- Hotel characteristics;
- ICT perceived knowledge;
- ICT adopted tools and use
- ICT adoption factors/resistance;
- Impact of ICT;
- Information seeking

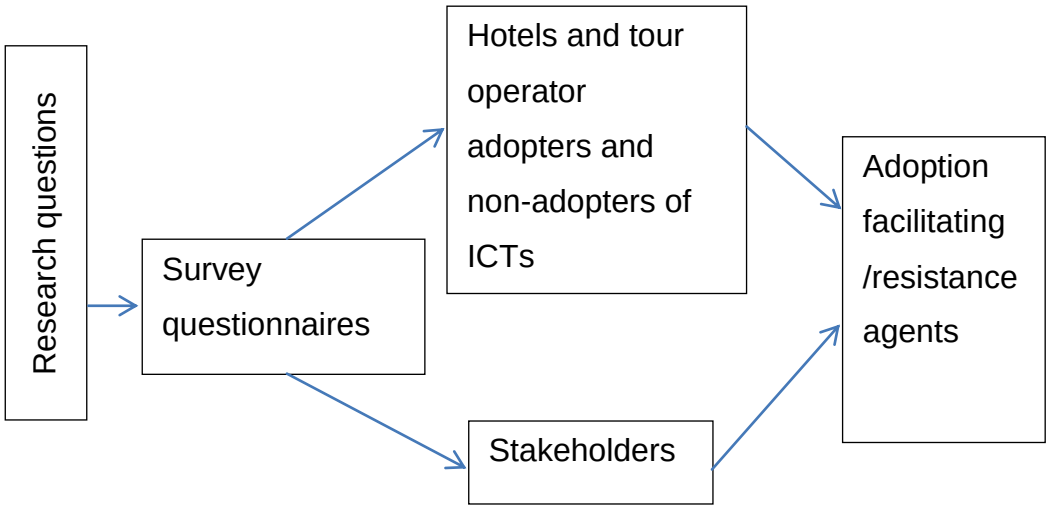


Figure 5-3 Second phase data collection framework

The overall results of the two phases aimed to provide the results of the research. The figure below, Figure 5-4, shows the results of the two phases providing the

overall results of the research. The adoption factor findings from phase 1, in conjunction with the findings of the adoption factors in phase 2, were analysed to provide the agents that are causes for these factors. Similarly, the non-adoption resistance factors were also analysed to provide the resistance agents that caused these factors. It was intended that the result of the analysis of these agents would provide ideas for further research.

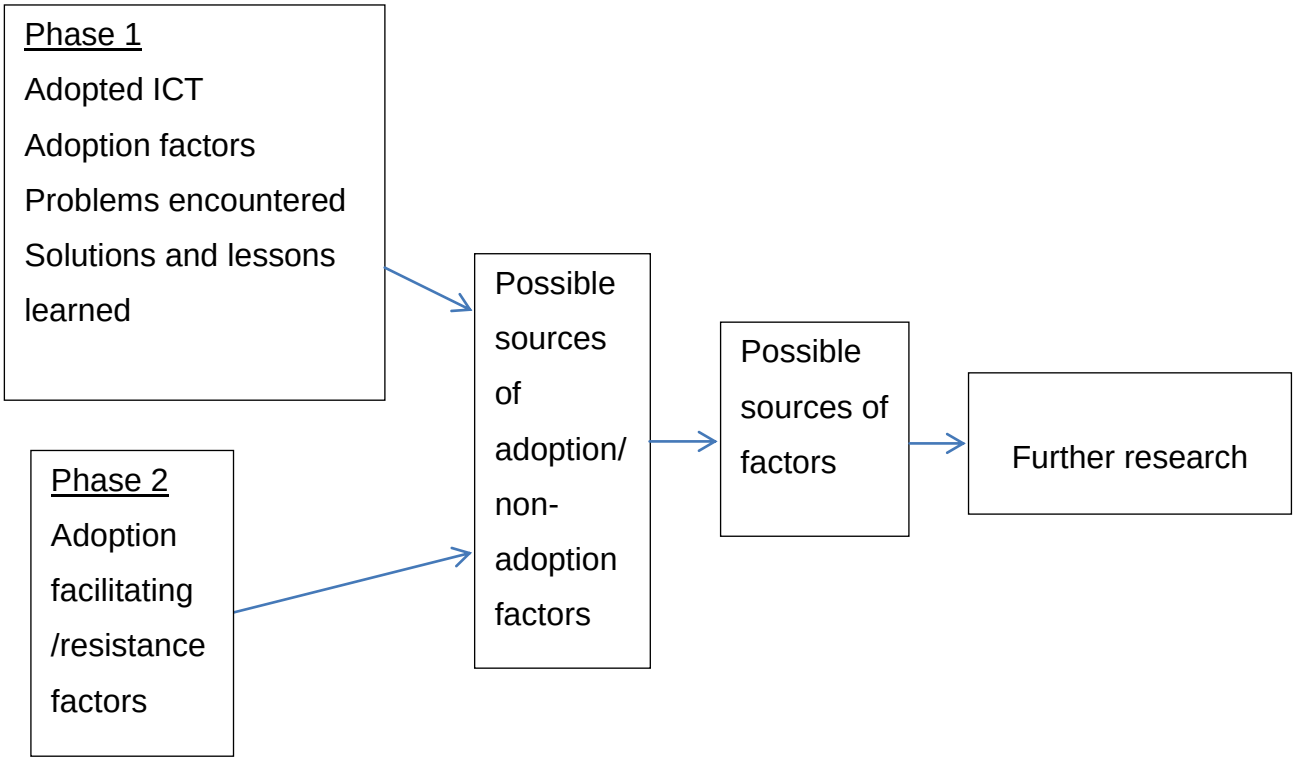


Figure 5-4 Overall research results from both phases of the research

5.7 First phase, qualitative study

The third field visit was conducted between 13th June and 3rd July 2010, see Table 5-1. The researcher prepared semi-structured interview questionnaires for hotel owners/managers, presented in Appendix D. The interview questionnaires were translated into Amharic.

As shown below, in Table 5-2, the total number of potential participants approached face-to-face was 62. Out of the 62 potential participants, five were stakeholders:

- Ethiopian telecommunications corporation (telecommunication operator)
- ICT for Development Agency
- Ethiopian Telecommunications Authority (ETA), (telecommunication regulator)
- Addis Ababa Chamber of Commerce (AACC)
- Ministry of Culture and Tourism

, five hotels were government-owned, and the rest, 52, were privately owned hotels. From the 62 potential participants, 30 volunteered to participate in the planned interviews. For personal reasons, change of managers in the hotels, or disagreement between managers and owners, or change of mind, 16 interviews were eventually conducted. None of the government-owned hotel managers or stakeholders were interviewed.

Institutions	Total number approached face-to-face	Volunteered to participate	Interviews conducted
Stakeholders	5	1(20%)	0
Privately-owned Hotels	52	29 (55.7%)	16 (30.7%)
Government- owned hotels	5	0 (0%)	0
Total	62	30(48.3%)	16(25.8%)

Table 5-2: Institutions approached face-to-face to participate in the research

The in-depth interviews were conducted orally, face-to-face with owners/managers; all the interviews were conducted in the hotels where the

owners/managers were working. In almost all cases, the owners'/managers' offices were used to conduct the interviews. One interviewee insisted on being interviewed in the hotel lobby where there was a live football game; it was difficult to hear what was said, and later on, it was difficult to transcribe the interview data.

The main target sample population of the study were managers or business owners. However, in cases where managers or business owners were not available, efforts were made to interview deputy managers. The intention was to interview the person who made the decision or at least knew the reasons that led to the adoption or rejection of ICT. Two deputy managers were interviewed; both had participated in the adoption of ICT in their respective hotels.

5.8 Questionnaire development

The development of the questionnaire is an important element in the research process. Its purpose is that the response to the questions needs to provide the answers to the research questions, and provide insight into the phenomenon under study. The result of data collection, its range, and the main answer it provides for each question is at the heart of question design (Casley & Lury 1987). For the first phase study, the design focused on exploring ICT adoption and use in the hotel sector in Addis Ababa. Interviews designed on a semi-structured basis were found to be appropriate for the following reasons. The structured part of the questionnaire aimed to answer specific areas, while the open part of the questionnaire provided the opportunity for the participants to express their experience in their own words. A small number of surveys were conducted with friends during the development of the questionnaire. These proved to be useful in correcting ambiguous questions, adjusting the order of questions and re-wording questions for clarity.

The questionnaire for hoteliers addressed the research questions on the adoption and usage of ICTs including problems encountered and solutions devised by the

hoteliers. The questionnaire consisted of four sections with nine closed questions and seventeen open-ended questions. The main aims of the first phase of the research were to explore the adoption and use of ICTs in the hotel sector. The seventeen open questions facilitated the free expression of research participants in describing their experiences in their own words. Furthermore, the open-ended questions enabled the researcher to use prompts and probes to elicit more details and depth than are initially forthcoming (David & Sutton 2011, Silverman 2005).

The aim of section one was to collect demographic data of the hoteliers, such as age, gender, and level of education. Section two of the questionnaire collected data on the characteristics of the hotel business, such as numbers of rooms and staff, star classification (if any) and annual turnover. The annual turnover question was dropped after the first interview as it became clear that participants got agitated and assumed that this may have been an exercise in collecting data on behalf of the tax office. It also included questions on the opportunities and challenges of the hotel business.

Section three of the questionnaire aimed to collect data on which ICTs were adopted, what were the main uses, difficulties encountered and possible solutions devised by the hoteliers. Section four was designed to collect data on the support gained by hoteliers from stakeholders. The objective was to find the difficulties faced by hoteliers when using ICTs and the support available to them to continue using ICT. This section concluded by asking about the advantages experienced by the hotels as a result of using ICT.

The questionnaire design relied heavily on the proposed theoretical framework. The first section, the demographic data questions, set out to discover if any of the social factors had an influence on the adoption of ICT by hoteliers and tour operators. Section two of the questionnaire envisaged finding the organisational characteristics, such as size of the organisation, that influence adoption. In addition, it tried to find out what ICTs were adopted and the role of stakeholders in

the adoption process. It then attempted to find out about availability, affordability and reliability of ICT for these organisations and to point to other factors such as political, economic, or technological issues that affected the adoption of ICT in this sector.

5.9 Oral administration of questionnaires

At the beginning of each interview, the researcher always introduced himself, the institution he was based in, and explained the research, including what the research was about, and its potential advantages. The researcher further explained matters of confidentiality and gave assurance that it would be kept confidential. It was also clearly stated that participants could withdraw at any time if they wished to do so. All participants were informed that participation was voluntary. The participants were informed that, if they agreed, the interviews would be recorded, as it would not be possible to write down what had been discussed. All participants agreed for the interviews to be audio-recorded except one manager. The manager stated “I do not know what you are going to use it for [even though this had been explained]. What if the recording falls into other people’s hands? I do not believe it will be secure and I do not want to take the risk.” The interview was conducted without audio-recording. At the end of the interview, the researcher provided an opportunity for the participants to ask questions about any of the issues raised.

When conducting interviews there were distractions of various kinds, there were interruptions during data collection, telephones needed to be answered, individuals required the assistance of managers. This created interruptions in the flow of thoughts and ideas. The researcher used these periods to note down observations, sometimes to go back to an interesting idea to elicit more information. In all cases, after the completion of the research, the researcher noted down the main points and any new ideas expressed, and observations made during the interview.

The research participants' accounts do not represent the full range of experiences, for a number of reasons. For example, there are things, which would not be known, that were not expressed by those who were not interviewed, there might be accounts that would be challenged, or not true when compared to others who were not heard (not interviewed).

5.10 Data analysis

Data were generated using interviews, personal accounts, and in-depth explanations on the adoption and use of ICTs, difficulties and work around used by the participants. Data analysis is important for discovering and building new understanding from the data. It is the responsibility of the researcher to interpret and find sense and meaning from the vast amount of textual data. In this construction, it is not possible to completely eliminate the bias of the researcher (Miles & Huberman 1994).

Denzin and Lincoln (2005) argue that there are two elements in the analysis of qualitative data. To capture the meaning and essence of the individual understanding and meaning, familiarity with the data is an essential part of the analysis. Furthermore, the data need to be reduced to a manageable size; to do this, identification of what is important and what is not, what should be included, what should be left out in the building of common themes, are important. In addition, it is the meaning and interpretation of the data that provide new insight and understanding of the phenomenon.

Data were transcribed in Amharic and then translated into English. The researcher sought the assistance of a colleague, Eskendir Getachew, whose first language is Amharic, and has extensive research experience, to check translation of the data. The interview data were then analysed using NVIVO, a qualitative data analysis software produced by QSR. The sources of the interviews are coded as shown in

Appendix J. There are two ways of coding the data: the first, deductive coding, comprises of the generation of a list of categories by which data is be coded before the start of data collection. The second, inductive coding, is generated from the data itself; categories are generated from the data itself (Miles & Huberman 1994). In this exploratory study, it was not possible to generate categories prior to data collection. Inductive coding was found to be appropriate for the analysis of this study.

David and Sutton (2011) presented the generation of categories as coding. A code is expressed by a keyword that holds a single idea. A collection of codes is represented by phrases representing chunks of text that highlight similarities or differences of ideas within and between texts in one or more interview transcripts. The final stage is to interpret the themes that explain the phenomenon under study.

Fielding and Lee (1991) pointed out that there are two qualitative research analysis methods using a computer. The first is vertical analysis whereby each interview is analysed to provide codes. These codes provide ideas that are considered important in explaining the phenomenon. The comparative analysis of codes from a group of interviews, known as horizontal analysis, provides themes. Each interview was analysed individually by creating categories, vertical analysis, followed by analysis of codes in all the interviews by creating themes.

5.11 Difficulties, solutions and lessons learnt

There were difficulties faced before and during data collection. Some of the difficulties are listed below:

- There were challenges and difficulties in accessing potential participants for data collection, including ICT providers, ICT agencies and government owned hotels;
- Ethical issues were raised by participants about confidentiality;

- No reliable list of the number of hoteliers in Addis Ababa was obtained from government offices;
- Difficulties faced in locating addresses of participants;
- It was not possible to conduct simple random sampling;
- As a result it might not be possible to extrapolate the results.

The results of the first phase indicated that because of lack of access to stakeholders, there was a concern regarding whether the data collection from hoteliers alone would be sufficient to continue with the study. A number of possible solutions was suggested; including collecting data from hoteliers in Tanzania to make a comparative study, and recruiting other businesses associated with hotels, including car hire and tour operators in Addis Ababa.

The idea which suggested conducting a comparative study between hotels in Tanzania and Ethiopia was not pursued for the following reasons. The first was the anticipated logistical problems in Tanzania including securing a research permit, and recruiting and conducting interviews in two phases requiring many more resources than were available for the research. Furthermore, the structure of the telecommunications sector is very different in these two countries. Tanzania has a liberalised telecommunications sector, while Ethiopia has one telecommunications operator. In the case of hotel associated businesses, both car hire and tour operator businesses were further explored. Many of the hotels run car hire businesses, and both the hotel and car-hire businesses are located in the same business premises, sharing Internet and computer systems. The researcher visited four car hire businesses that were not attached to any hotel and found that there were no Internet or computer systems used in these businesses. For the above reasons, the car hire business was not included in the study. On the other hand, many tour operators operate independently of hotels and have access to ICTs in their businesses. Furthermore, these businesses are owned and operated by

individuals, implying that access and data collection would be possible; hence tour operator businesses were included in the study.

5.12 Second phase research design

The research design provided in section 5.6 was modified because of the difficulties encountered in the first phase of the study (see Figure 5-5 below). In the second phase, two groups from the hotel and tour operator business were surveyed. The second phase of the research used survey methodology. The survey questions included both open-ended and closed questions. The aim of including open-ended questions was to find the factors of adoption or non-adoption expressed in the words of the research participants.

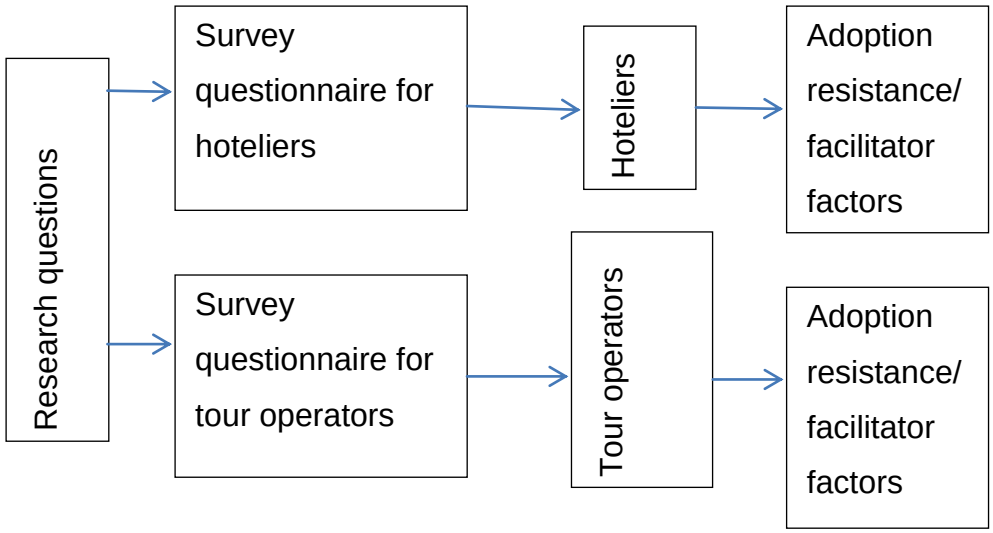


Figure 5-5 Second phase research design for hoteliers and tour operators

The second phase research design was informed by the theoretical framework to find the internal and external factors that influence the adoption and also non-adoption of ICT in the hotel and tour operator business.

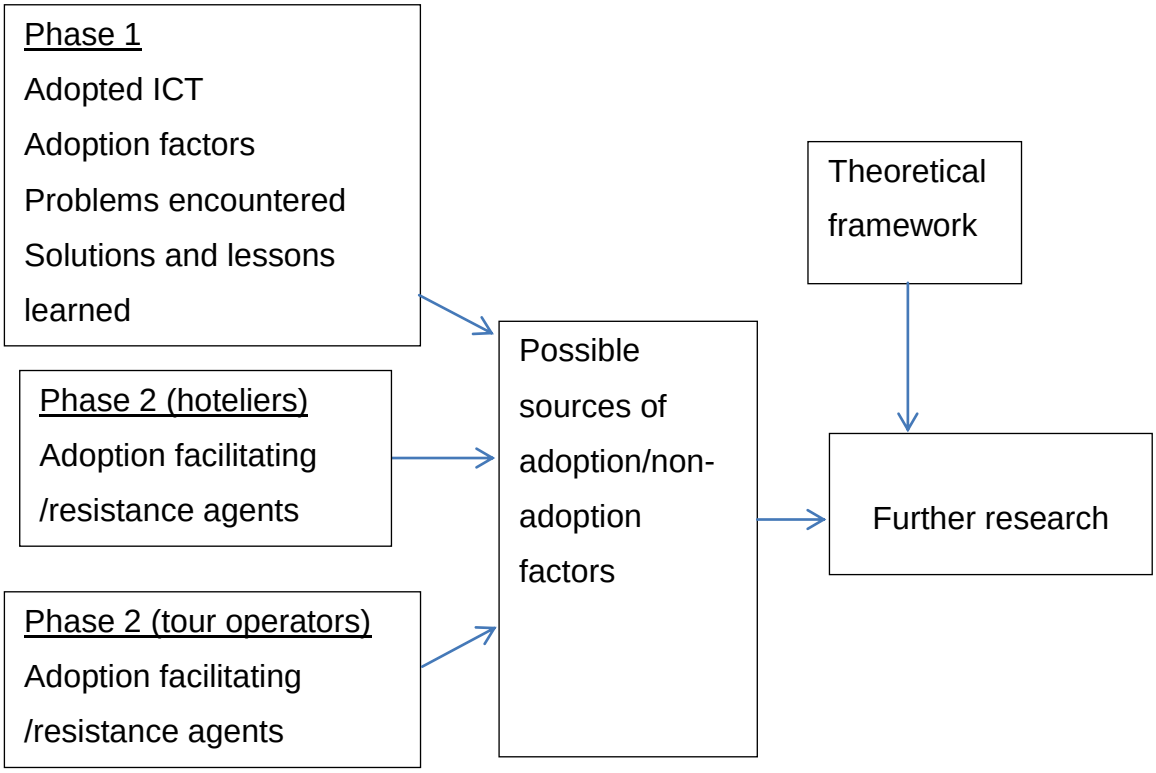


Figure 5-6 Overall research plan from both research phases

The overall research plan is shown above in Figure 5-6. It includes both phases of data collection, analysis and the findings of the research, given as possible sources of adoption/non-adoption factors. It finally provides possible further research areas informed by the proposed theoretical framework.

5.13 Study population and sampling

A fourth field visit was conducted (5/09/2011-23/09/2011), see Table 5-1, and its objectives were:

- To find the population size of hoteliers and tour operators;
- To set out sample selection criteria; and
- To conduct a survey.

In research, understanding and defining the research population is important on many fronts: failure to include those that are not accessible results in the sample

being unrepresentative. The results from such research also have implications on the findings (Sydor 2013). To find the population size the researcher visited the Ministry of Trade and Industry (MTI), the Addis Ababa Municipality Office, the Ministry of Culture and Tourism (MCT), the Micro and Small Business Development Agency, the Ethiopian Central Statistics Agency and the Chamber of Commerce in Addis Ababa, to gain information about the number and locations of hoteliers and tour operators in Addis Ababa. The Chamber of Commerce has 6,000 registered members. In Addis Ketema, a sub-city administration, there are 15,000 registered traders. However, these lists are rarely up-to-date or accurate. Other research also confirms that lists of organisations were never accurate or updated regularly (Curran & Blackburn 2001).

The data obtained from the Addis Ababa Municipality Office indicated that there were 648 hotels without any star classification and 67 hotels with some kind of star classification. The final list was made up of 715 hotels. The data from MTI listed the business owner's name and address, and the year the licence was renewed. However, the data did not show the business name or business address. Furthermore, the data also showed that 25% of businesses on the list had not renewed their licenses during the last six years. Therefore, it was difficult to establish if the business was still operational. The list that was provided from MTI on tour operators indicated that there were 43 tour operators in Addis Ababa. However, the researcher was able to identify 96 tour operators in the City.

Lists of businesses and their physical locations are essential if one is to collect data. The available map from the Ethiopian Mapping Agency (EMA) did not provide a detailed location map by house number. The level of detail on the map was limited to the demarcation of the sub-cities administration level. To locate a particular business physically, even if one has the full address, requires assistance from the local administration office that has the knowledge of the housing numbering layout. In most cases addresses are given with reference to

distinguishable landmarks. The address of the Hilton hotel as advertised on its website provides directions to the hotel as follows:

> From Bole International Airport, head north for Africa Avenue, then turn right towards St Stefanos' Church and right again onto Menelik II Avenue. The Hilton Addis Ababa hotel is opposite the Ministry of Foreign Affairs (Hilton 2012).

In an ideal case, the data collected from the total population would provide an accurate result without any errors. However, because of limited resources, only a fraction of the total population could be selected for data collection. The size of the sample for the survey has to be sufficient to provide enough cases to guarantee inclusion from each relevant population group of interest. For example, Fowler (2008) argues that the survey size should be, for major groups at least 100 cases, and for minor sub-groups between 20 to 50 cases. Somekh and Lewin (2005) point out that in correlational studies, finding relationships between variables, a minimum of 30 cases need to be considered, in an experimental design, where one or more variables are controlled, there should be at least 30 cases.

David and Sutton (2011) point out that sampling is the process of deciding who will participate in the research. Simple random sampling is a simple straightforward strategy in which each member of the population has an equal chance of selection for the research. This sampling strategy reduces the bias in the selection process. However, to use random sampling one requires a full list of the members and locations of the population of interest. In this particular study, there are no full lists of hotels or tour operators in the city or their location.

The city is divided into ten administrative regions. However, many hotels and tour operators tends to concentrate near the airport, and where international organisations are located. For example, the two five stars hotels are located near the African Union and the Economic Commission for Africa.

Hoyle et al. (2002) used the following formula to estimate the sample size:

$$\mathbf{n} = \frac{\mathbf{N}}{\mathbf{1} + \left[\frac{N\left(\frac{L}{\mathbf{100}}\right)^{2}}{\mathbf{1.96^{2}}p(\mathbf{1}-p)}\right]}$$

Where N = total number of hoteliers (715 provided by government organisations)

L = maximum allowed error (in this case 5%)

n = sample size

P = percentage of expected hoteliers that adopt ICT in their business.

No previous studies have been conducted on the percentage of hoteliers that adopt ICT. The data from ITU indicate that there are low levels of adoption of ICT in Ethiopia. It is estimated that 10% of hoteliers adopt ICT because of their poor financial situation.

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Therefore,

$$\mathbf{n} = \frac{\mathbf{715}}{\mathbf{1} + \left[\frac{\mathbf{715}\left(\frac{\mathbf{5}}{\mathbf{100}}\right)^{2}}{\mathbf{1.96^{2}0.1(1-0.1)}}\right]}$$

n= 115.87

n=116

Similarly for tour operators:

$$\mathbf{n} = \frac{\mathbf{96}}{\mathbf{1} + \left[\frac{\mathbf{96}\left(\frac{\mathbf{5}}{\mathbf{100}}\right)^{2}}{\mathbf{1.96^{2}0.1(1-0.1)}}\right]}$$

n= 56.63

n=57

The aim of these calculations is to get an indication of the size of the sample required for data collection. However, the problem of establishing the exact population size and also the difficulties in finding the physical locations of the businesses have implications for sample selection. The above two problems make it difficult to conduct simple random sampling, this has further implications on extrapolating the findings.

Addis Ababa has 10 administrative areas. At the outset, it was intended to include samples from all the administrative areas. As a starting point, the local administrative offices were approached to find out the locations of hotels and tour operators in the area. Secondly, a list was prepared using local knowledge of the researcher, research assistant and friends. Furthermore, snowball-sampling strategy was used to find the hotels and tour operators in each administrative locality. Snowball sampling is based on social networking and provides an informal method of accessing the required population (Sadler et al. 2010). However, snowball sampling introduces bias in the selection process (Griffiths et al. 1993). To reduce bias, all possible available hoteliers' and tour operators' addresses from many sources should be included. For example, the locations and addresses of these hotels were compiled by the researcher, the research assistant, local administrative offices, and friends and families.

At the end of the field visit, the researcher conducted a survey of 34 hoteliers and 11 tour operators. It became apparent that to complete the survey satisfactorily the researcher needed to seek the assistance of a friend who lives in Addis Ababa and had extensive experience of data collection. Mr Girma Leggess had more than twenty years of experience of collecting data for the Ethiopian Central Statistics Agency (ECSA). He had participated in censuses and other data collection. The survey questionnaires were discussed with him, also how data would be collected, and trial data collection conducted. The collected data were checked for accuracy, and data collection commenced. To facilitate data collection when seeking

cooperation from hoteliers and tour operators, a letter was prepared by the researcher to be presented by Mr Girma Legges (see English version presented in Appendix L and Amharic version presented in Appendix K.

In total, 226 hoteliers were approached for the survey; 75 were not able to participate for various reasons, such as lack of time; another reason was that people are polite and do not want to say no to the request but failed to participate; twenty three refused to participate. However, the total number of hoteliers who participated in the survey was 128. In the case of tour operators, 96 establishments were approached, 31 were not able to participant for various reasons, and eight refused to participate, while 57 participated.

5.14 Survey methodology and questionnaire development

Survey methodology is a purposeful mechanism to generate primary data to answer research questions (Curwin & Slater 2002). It involves the design of a questionnaire to collect data, and requires insightful analysis. The purpose of the development of a questionnaire is to enable the collection of primary data that would provide answers to the research questions. Questions take various forms, including open-ended ones, where respondents express their answers in their own words, while other questions are closed, where respondents choose answers from specific categories (David & Sutton 2011). The process has to be appropriate (to collect data ethically from the population of interest) and adequate to provide answers to the research questions.

Survey methodology was found to be appropriate to collect data from a large sample of hoteliers and tour operators. The main advantages of survey methodology are:

- Relatively easy to administer;
- Can be used to collect data from a large number of respondents;

- A broad range of data can be collected (opinion, beliefs, facts, attitudes and values)

The main disadvantages of survey methodology are:

- Respondents may not provide honest answers if there is a perception that they might present themselves in an unfavourable manner;
- Surveys with closed questions leave out deviant answers;

To compensate for the limitations of the survey, the most important questions that illicit the factors of the adoption or rejection of ICT, open-ended questions are used. This provides the opportunity for participants to answer these questions in their own words.

5.14.1 Questionnaire for hoteliers

The questionnaire designed for hotel owners/managers aimed to collect data that would enable the research questions to be answered. The research questions were to find the factors that affect the adoption/rejection of ICTs in the hotel and tour operator business. The questionnaire for hoteliers consisted of five sections with a total of 35 questions. The first section was designed to collect demographic data, such as gender, age, education, and experience. Section two of the questionnaire collected data on the nature of the business, including date of establishment, star allocation, number of staff and number of rooms in the hotel. It was believed that these factors are influential in estimating the size of the business.

Section three was designed to elicit the participants' perceived knowledge and understanding of ICT. It focused on three areas: computers, the Internet and the website, including source of knowledge, such as knowledge obtained from school, self-taught, from work or other sources. It was envisaged that for adoption, knowledge and understanding are important elements for the adoption of ICTs.

Section four was designed to collect data to find what ICTs were adopted and the factors that were influential in the adoption. It also collected data on the factors for non-adoption. In addition, in this section, using the Likert scale, data were collected on how ICTs were used for various activities in the hotels and the impact of ICTs lack of availability on various operations in the hotels. Section five was designed to find how ICTs were used by hoteliers for information seeking.

5.14.2 Questionnaire design for tour operators

The questionnaire design to collect data from owners/managers of tour operator businesses aimed to collect data that would facilitate answers to the research questions. The questionnaire consisted of five sections with a total of 35 questions. Section one was designed to collect demographic data including gender, age, education level and experience.

Section two was designed to gather data on the characteristics of the business, including when the business started trading, areas of operation, number of staff and number of branches. It was intended to gauge the size of the business and geographical distribution. Section three was designed to gather data on the perception of the participants' knowledge and understanding of ICT.

Section four was aimed at finding what ICTs tools were adopted and the factors that influenced the adoption. It was also designed to find what ICTs tools are not adopted and the resistance factors that influence non-adoption. Similarly, as with the questionnaire for hoteliers, the use of ICTs and impact data were collected using the Likert scale. Finally, section five was designed to collect data on the use of ICTs for information seeking by owners/managers.

5.15 Administering the questionnaires

The researcher administered the questionnaire orally with hoteliers and tour operators in the period from 5/09/2011 to 23/09/2011. Furthermore, the researcher

assistant continued to collect data until 27/12/2012. In total 128 hoteliers and 57 tour operators were surveyed. The questionnaires were administered orally face-to-face by the researcher and the research assistant. The survey was conducted with both hotelier and tour operator owners/managers in their offices. A formal consent form was prepared to be read to the potential participants. It explained the purpose of the study, it also stated that participation was voluntary and participants could withdraw at any stage if they wished to. Verbal consent was requested from all participants. The Amharic and English versions of the consent form are presented in Appendix N and Appendix M respectively. One of the advantages of conducting a survey face-to-face was that it was effective in clearing up any ambiguity and further explanations could be given to give clarity and understanding.

5.16 Data analysis

The data collected during the second phase comprises of both qualitative and quantitative data. The qualitative data originating from the open-ended questions were collected and analysed thematically. A common trend was formulated to form a theme. The open-ended questions for both hoteliers and tour operators attempted to find the facilitators and resistance factors for the adoption of ICTs in these businesses. The data are presented in Chapter 7 .

The collected quantitative data were coded and analysed using SPSS. The results are presented in Chapter 7 . The results of the data analysis included the ICTs tools adopted, the size of hotel and adoption of ICTs, awareness and knowledge of ICTs and adoption behaviour, including information seeking using ICTs.

5.17 Assessment of the research

The first phase of the study was anchored on a qualitative method of enquiry. Spencer et al (2003) formulated the evaluation of a qualitative method framework

to assess qualitative research. Among other criteria, it includes reliability of the data and adequate documentation of the research process. In all research, data are the foundation, their accurate recording and analysis are at the core for reporting the findings including theory building (Silverman 2005).

It is important to consider the quality of research conducted and whether the findings presented are 'valid' and the conclusions generated can be justified. Unlike in qualitative research, there is an established tradition of assessment of research quality for quantitative research such as reliability, validity and representativeness (David & Sutton 2011, Somekh & Lewin 2005, Curwin & Slater 2002).

Reliability refers to the research process, that replicability of results would be achieved if the measures of the tests were applied repeatedly. Hammersley (1992 p. 67) puts it as:

> *"Reliability refers to the degree of consistency with which instances are assigned to the same category by different observers or the same observer at different times"*

Silverman (2005) argues that uniform coding is a means of producing reliability of a research method. In recent years, the use of computer software has assisted the development of uniform coding. This enhances the reliability of the research process. For example, Lee and Fielding (1995) noted that the use of computers for coding, especially in team research, provides shared meanings for codes, and provides some level of reliability. In the first phase of this research, all interviews were audio-recorded, except one. All interviews were conducted in the Amharic language. The interview data were transcribed and then translated into English. NVIVO software was used to analyse the data. Other techniques used to increase the level of reliability of the method include careful construction of the questionnaire and conducting a pilot to reduce ambiguity.

The internal validity of research mainly focuses on making sure that other factors are not responsible for the variations in independent variables (Somekh & Lewin 2005). For research to be valid, it first needs to be reliable, and one needs to be sure that the collected data measure the intended variables. In quantitative methods, the first criterion for external validity is the representativeness of the selected sample of the population of study. However, in some cases, for various reasons, it is difficult to ascertain that the selected sample is representative of the selected population. For example, the selected population is a hard-to-reach population (Sydor 2013); in the case of this study, it was not possible to find a reliable list and location of potential participants. For this study, non-probability sampling was used for both hoteliers and tour operators. In the second phase of the research, both qualitative and quantitative data were collected. The quantitative data were analysed using SPSS software while the qualitative data were analysed using Excel software.

Triangulation of source of data or methods has been presented as a way of checking results from different sources. Triangulation also provides different but complementary data. (Creswell & Plano Clark 2007). Triangulation when used with different methods, for example qualitative and quantitative methods, brings together differing strengths and non-overlapping weaknesses of the two methods. The qualitative method provides in-depth detailed data from a smaller population. Whereas the quantitative method provides trends and generalisations from large sample data.

Creswell and Plano Clark (2007) suggested four major types of mixed methods designs:

1. Convergence model: compare and contrast the results of quantitative and qualitative data
2. Transformation model: transform qualitative data into quantitative data, compare and contrast the two quantitative data sets
3. Explanatory: use qualitative data to help explain quantitative results

4. Exploratory: collect quantitative data to test and explain a relationship found in qualitative data

In this study, both quantitative and qualitative data were collected during two phases. The convergence model was used to compare and contrast the results found in these two phases.

Lincoln and Guba (1985) propose two primary criteria for assessing a qualitative study: trustworthiness and authenticity. Trustworthiness is made up of four criteria, each of which has an equivalent criterion in qualitative research (Shento 2004, p:73)

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Qualitative	Quantitative
1. Credibility	internal validity
2. Transferability	external validity
3. Dependability	reliability
4. Confirmability	objectivity

Credibility

In social research the existence of multiple accounts implies that what is claimed has to have credibility, emphasising what is claimed is trustworthy. There are provisions that can be set to ensure credibility including:

- Adoption of appropriate, well recognised research methods;
- Development of early familiarity with culture of participating organisations;
- Random sampling of individuals serving as informants;
- Triangulation via the use of different methods, different types of informants and different sites;
- Tactics to help ensure honesty in informants;
- Iterative questioning in data collection dialogues;

- Negative case analysis;
- Debriefing sessions between researcher and superiors;
- Peer scrutiny of project;
- Use of “reflective commentary”;
- Description of background, qualifications and experience of the researcher;
- Member checks of data collected and interpretations/theories formed;
- Thick description of phenomenon under scrutiny;
- Examination of previous research to frame findings.

Transferability

Similarly, the following provisions are available for a researcher to ensure transferability:

- Provision of background data to establish context of study and detailed description of phenomenon in question to allow comparisons to be made

Dependability

In the case of dependability, the following two provisions are available for the researcher to employ:

- Employment of “overlapping methods”;
- In-depth methodological description to allow the study to be repeated.

Confirmability

In addition, the following provisions are available for the researcher to ensure confirmability:

- Triangulation to reduce the effect of investigator bias;
- Admission of the researcher’s beliefs and assumptions;
- Recognition of shortcomings in the study’s methods and their potential effects;
- In-depth methodological description to allow integrity of research results to be scrutinised;

- Use of diagrams to demonstrate “audit trail”.

In this research, the research design includes many elements to ensure trustworthiness. The selection of two methods, qualitative and quantitative, provides methodology triangulation. Furthermore, data collection methods of in-depth interviews and surveys using different sources of data from hoteliers and tour operators, provide triangulation in data collection methods and data sources.

The description of the research methods and the applications of the methods, including the researcher’s background and experience in ICT in the School of Hospitality and Tourism, help to understand the ICT requirements of the hotel sector. Furthermore, the researcher is originally from Ethiopia and has an understanding of the culture and language of the sample population. For example, the ethical issues discovered and implemented helped to collect data from hoteliers and tour operators in a sensitive and appropriate manner.

The existing research background, presented in Chapter 2 with the existing adoption of ICT literature reviewed in Chapter 3 followed by the existing adoption and diffusion theories in Chapter 4 form the detailed presentation of background and state of the adoption of ICT. These allow comparison of the background context to a similar context for future research. The research method presented in this chapter provides a thick description that ensures dependability. All the above measures provide credibility, transferability, dependability and confirmability to ascertain trustworthiness of the research.

5.18 Ethical issues

An unresolved debate is on-going about whether researchers need to use informed consent based on the cultural, social and political system of the study population, or whether to adopt a single internationally recognised standard of informed consent (Burgess, 2007, Levine, 1991, Dawson and Kass, 2005). Application of informed consent fundamentally requires the subject to voluntarily

consent to participate in a research. In many developing countries the application of informed consent is conducted against a backdrop of a political system with oppressive limitations on the freedom of individuals and is a critical issue – it becomes contentious to call it free choice for the participants (Beyrer & Kass 2002). Furthermore, lack of political rights and freedoms, and as a result of these, lack of education and free information flow, have a significant impact on potential research participants. Even with these differences, researchers should ensure the rights, privacy and welfare of the people and communities that form the study population.

The application of informed consent is the method of applying ethics and morals of the guiding principles based on the Declaration of Helsinki, and the guidelines of other international, national, institutional, and professional bodies. The purpose is to safeguard research participants, particularly vulnerable groups in society, from unethical research. The core idea is that researchers seek to inform research participants, as clearly as possible, of the advantages and disadvantages of participation. Furthermore, researchers should seek to allow potential participants to express their intentions, based on their own free choice, without any pressure to participate or opt out.

The application of informed consent should be sensitive to the cultural, social, and political context of the research population; there is recognition by research institutions and centres, of the differences of cultural, social, and political factors in developing countries that need to be observed during the administration of informed consent (Decosta et al., 2004, Hoffmaster, 1992, Tangwa, 2004). Furthermore, the report from the Parliamentary Office of Science and Technology of the UK government states that the Welcome Trust and The Department for International Development (DFID) guidelines recognise the differences of social, cultural and political contexts in the developing world. It emphasises that researchers should seek consent in a culturally appropriate manner as well as address other concerns (Parliamentary Office of Science and Technology, 2008).

However, this guideline lacks clarity, particularly when addressing concerns that can arise because of political, social, or cultural issues.

Beyrer and Kass (2002) have suggested that researchers need to seek advice from human rights groups and individuals, on the ability of individuals to exercise free will and make appropriate judgments on how to conduct the application of consent. It includes what is safe for the participants in the particular context. There is no single system that can be appropriate in satisfying the varieties of research contexts.

Research participants take some level of risk when participating in research. The risks involved depend on two major factors: the academic field of study and the context of the research settings. To minimise the risk, participants form a relationship with researchers. This create trust between the parties; however, trust cannot be established simply through the mechanism of the application of signed consent forms; less formal methods are used to establish trust. Participants use their judgement to decide whether a researcher can be trusted. Participants observe the researcher based on local social and cultural ethos. Trustworthy characteristics have their own measures based on a specified cultural, social and political context. This will lead potential participants to make a decision on trustworthiness of the researchers. It is a culmination of information gathering, judging the behaviour of the researcher, whether he/she is trustworthy, based on the cultural, social and political context .

In the research culture of the West, to protect the wellbeing of individual research participants in research, the participant normally signs a consent form as an indication that the individual is participating of his/her own free will. Even though the intention is to protect the individual who is participating in the research, the consent form is also a mechanism to protect the institution from a future lawsuit. Most of the time, in the case of Addis Ababa, trust plays a vital role in the contractual agreement of individuals; in many instances contractual agreement is

confirmed verbally. However, if there are other implications such as financial or other issues that may cause a predicament for any of the parties because of a failure to satisfy the contractual agreement, then individuals tend to have a signed agreement. Culturally, huge emphasis is placed on signed agreements; it is interpreted as taking some level of obligation for the satisfaction of the contractual agreement. It is not taken lightly, say like as an indication of agreement to participate in research; rather, individuals assume responsibility for what they are signing on for.

In the case of research practice, at least in the case of Addis Ababa, the indication is that it is very unusual to ask participants to sign a consent form, for two reasons mainly. Firstly, signing a document is taken to be a kind of obligation that needs to be met by the person signing the form. Secondly, signing consent forms is not actively practised, at least in the case of non-biological fields. For these reasons, individuals will not volunteer to sign a consent form. In almost all cases, in this research, verbal consent was used as an indication of free will participation.

The researcher sought advice from two researchers in Ethiopia on ethical and informed consent procedures. It was clear that people are apprehensive about getting into trouble with the authorities and reluctant to write down their names and sign research consent forms. The main themes that arose from discussions with the researchers for non-medical research were that:

- Informed consent is conducted verbally,
- Requests for signed consent forms are very unusual, except in cases where subjects have previous exposure to research,
- There is a strong argument against signed consent forms, as they tend to protect the research institutions and the researchers,
- It also lacks sensitivity and creates tension between the researcher and the subjects resulting in opting out,

- The safety and wellbeing of research participants always take priority over everything else.

In Ethiopia, it is not normal practice to request a signature from research participants on consent forms. As a result of real or assumed risks for participants, verbal rather than written consent was used in this research. To satisfy ethics requirements, all research participants were informed about the research aims and objectives. Furthermore, it was explained to participants that their identity would be confidential, and would be protected, and that they could opt out of the survey at any time.

5.19 Conclusion

This chapter presents the research method used for this study. This study had two phases, it used quantitative and qualitative research methods. The first phase was based on a qualitative research method focusing on hoteliers that adopt ICT. In the second phase, both quantitative and qualitative methods were used. In this phase data were collected from hoteliers and tour operators

The advantages and problems of using the mixed method were presented and discussed. In both phases, before the administration of questionnaires a pilot test was conducted to correct and focus the questions. The results of the first phase helped to re-design the research method including ethical issues that needed to be observed during the administration of the second phase of data collection. Furthermore, data analysis procedures, including the assessment of the research, were presented. The ethical issues were discussed and presented. The next chapter will present the data findings of the first phase.

Chapter 6 First phase data findings

6.1 Introduction

This chapter presents the findings of the first phase of the research. In this phase, sixteen hotel owners/managers, who adopted ICT in their establishments, were interviewed. The emerging patterns from the interview data were organised into codes and then developed into themes and these are presented below.

The findings provide the background of the opportunities and difficulties of the owners/managers in the sector who were interviewed, particularly with regard to the adoption and use of ICT. Furthermore, it presents information on the availability of ICT, affordability and maintenance, and how it is used in the sector. It then presents the roles played by stakeholders and the resulting cultural, legal and political factors that affect the diffusion of ICT in the hotel sector.

6.2 Backgrounds of interviewed hotel owners/managers

The owners/managers of hotels were interviewed during the first phase of the research. All the hotels were privately[9] owned and located in Addis Ababa. In this first phase, all hotels had adopted ICTs. Of the 16 hotels, six had no star classifications, four had 3 star and six had 4 star classifications. There was one participant with education at high school level, while fifteen had a college education with a diploma (4), degree (9), and masters (2) level education. There were two female and 14 male participants.

Most of the participants had many years of work experience in the hotel sector; four of the participants had 21 or more years' experience, while three participants had between 11 to 20 years and five participants had 4 to 10 years' experience,

[9] There are government owned hotels in Addis Ababa, none of them were willing to participate in the study.

the remaining four participants had 1 to 3 years' experience. The hotels provided employment for locals; in total, all the hotels provided employment for approximately one thousand residents.

6.3 What are the opportunities/difficulties in the hotel sector?

Respondents were asked to express their view on the opportunities and difficulties of the hotel sector. A prevalent theme that was developed in many of the discussions was that, in recent years, the hotel sector was growing, helped by government policy that facilitated the flow of new investment. The policy provided tax-free import incentives; as a result, there was a noticeable increase in the number of hotels in the capital. The following respondents expressed their views as follows:

> *"The government is helping the sector by promoting it, the sector is open for investors and there are many incentives such as tax free options for a lot of things, as a result, hotel numbers have increased tremendously." C13*

> *"Currently in Ethiopia, the hotel sector is booming, it contributes positively to the current business environment. There is a huge demand for hotel products and services, particularly from international organisations." C7*

Another respondent had a similar point of view as follows:

> *"There is a visible promise, which starts with respect to the city's development. Addis is the home of many organisations including government and non-government, the African Union - because of these organisations the importance of the hotel sector has grown greatly." C13*

Several respondents discussed the wider implications of the expansion of the hotel sector; these include generation of employment, contribution to government taxes and bringing in foreign currency. In the words of one interviewee:

> *"The advantages of the hotel sector are numerous; inherently it is a labour intensive industry and as a result it provides job opportunities*

> *for locals, it contributes to government taxes, this in turn contributes to the development of the country. Furthermore, it uses agricultural products, hence it supports farmers and merchants. It is a source of foreign currency for the country." C3*

However, the tax-free import incentive is only benefiting newly-built hotels that attract the lucrative market (guests from abroad). The older hotels, while renovating and investing, have no tax-free import support, and this is creating an uneven playing field for hoteliers. One of the respondents expressed this point of view as follows:

> *"This hotel was built 10 years ago and if we want to expand and improve it we need to buy technological stuff. We do not have the financial ability to buy locally, so you go abroad and then the tax is more than the price of the goods; that makes if very expensive. It is very difficult to provide proper service in such a situation. I can give you an example, in many cases any 4 star hotel needs to have a card lock system. Even if you wanted to buy it from the Arab countries, a cheap one would cost you 50 thousand Riyal; if the government does not allow you to have it tax free, then the tax will triple the total price, you can imagine the total price, this is a very serious problem. The sector lacks reliable conditions in which to operate." C4*

A number of respondents raised the issue of the difficulties that arise because of an increase in the number of hotels in the city; it increases the competition among the hotels in two ways. The first is that it creates competition among hoteliers for the limited number of professionals employed by them, this is pushing wages higher and higher. The second is that the growth of tourist numbers is much slower than the growth of the hotel sector; because of competition, there is a reduction in the prices of hotel rooms. The following respondents summarised many of these points:

> *"This competition raises some issues, such as: what is the human resource need of the hotels from the employers' and the universities' perspectives, but also, is there any correlation between the number of guests coming for business or pleasure and the capacity of the hotels? Is the development of hotels faster than what is required in the current environment?" C13*

"The hotel becomes an educational institution as well. We teach and train our staff at great cost. Unfortunately, after all that investment staff leave the job for as little as 10birr (55pence)/month increase in salary. This is a huge loss for the hotel. This is caused, as I said earlier, by the growth of the hotel sector and shortage of staff with the right qualifications, attitude and experience. Many of our staff have different backgrounds and all are trained here in the hotel." C9

The significance of star allocation to new hotels was widely discussed and the majority of respondents were concerned that it is left for the owners or managers of the hotels to decide on the star classification. One respondent described this point as follows:

"This hotel star classification was allocated by the owner of the hotel. The tourism department has stopped issuing classification a long time ago; apart from the case of the Hilton and Sheraton hotels, there is an effort to classify existing hotels. It will be after the future classification that we will know the star classification of this hotel. It has to be seen whether we have estimated our star rating to be right or not. It is after the commission classification that we will know what it will be. There is rumour that they will soon start to classify hotels." C13

Respondents also discussed that the government has identified the need for harmonising the star classification system of hotels and are working to set the mechanism in motion. However, it appeared that many respondents are concerned at the lack of clarity of how the existing hotels will be classified, the following respondents point out this view as follows:

"For your information, the government has ordered experts to conduct research in Asia, Europe and Egypt to formulate these criteria. Previously, there were no criteria to follow, people built 10 storey buildings and give them a star classification. Now even these hotels are going to be re-classified and nobody knows what is going to happen; the hotels are already built, this is a very precarious situation, this creates uncertainty. If the building is short of the criteria stipulated, no-one knows how this will be handled, the owners will not

demolish these buildings. However, this is very good for people who are now starting to build hotels." C4

"It is getting very easy now, it means the selection of the location of the hotel is the choice of the owner, however now there are criteria to be followed to build a hotel. There are 72 criteria that need to be satisfied, as a result these criteria need to be followed during the building of the hotel. If one wants to build a five star hotel there are criteria specifically for this that need to be followed, otherwise there will be a problem for the individual." C12

6.4 What are the roles of stakeholders in the adoption process?

Many interviewees discussed the positive role the government played in supporting the hotel sector. The support includes the policy to continually open up the sector to private investment that has resulted in establishment of many new hotels in the capital. In addition, the support extends to tax-free incentives for new hotels to import materials that are required to start the hotels.

"The government is helping the sector by promoting it, the sector is open to investors and there are many incentives such as tax free options for a lot of things, as a result, hotel numbers have increased tremendously." C11

On the other hand, the lack of regulations and standards leads to a restrictive and confusing environment. Furthermore, this situation creates confusion and in the process, some hoteliers are themselves allocating star classifications to their own hotels. These classifications given by the hoteliers are mainly 3 or 4 star allocations, but others are still waiting for their hotels to be classified. One manager respondent of a hotel expressed how the star classification was done:

"The hotel is a 4 star hotel. The owners of the hotel allocated this classification. The Tourism department stopped issuing classifications a long time ago. Apart from the case of the Hilton and Sheraton hotels, there is an effort to classify existing hotels. After that we will know if what we have estimated to be our star rating or the Minister of Tourism commission classification is correct. It is after the commission classification that we know what it will be. There is rumour that they will soon start to classify hotels." C14

Another hotelier expressed the same view as follows:

> *"Yes, the hoteliers themselves allocate a star rating to their own hotels, we would like 3* or we would like 4*. No government body allocates star ratings to hotels." C12*

There is uncertainty about the existing classification of hotels; this will be changed in the near future. The government is in the process of harmonising the star rating classification of hotels. The Ministry of Culture and Tourism has been given the responsibility of undertaking the standardisation and reclassification of the star rating of all hotels in the country and it is not known what the impact of this re-classification of hotels will be.

The support of other government organisations, such as the ICT for Development Agency or the Ministry of Culture and Tourism for the hotel sector in general, or ICT in particular, is not positive; one participant expressed it as follows:

> *"Nothing, we have not received any support or advice from the agency." C1*

Another participant expressed it as follows:

> *"The main information we are looking for there is what is mentioned about the hotel, what kind of promotion they are doing, the information there is mainly four to five years old." C6*

Other associations such as the Chamber of Commerce of Addis Ababa or the Hotel Association are not active and their support for hoteliers is very limited. There are some activities such as training and trade fares conducted by the Chamber of Commerce. The main theme that was reflected by the respondents was that these organisations are very weak, one respondent expressed this view as follows:

> *"I have mentioned the association, it is not a strong organisation. Only three or four hotels participate actively. It is not possible to do anything with very few members. The association has faced many difficulties. Unless, we the profession and the hotel owners get*

involved voluntarily, and contribute to strengthen the association, with the current number of members nothing can be achieved." C13

"This hotel has been operational for the last two years, we just became a member of the Chamber of Commerce a short while ago, they contact us regularly, inform us about planned activities, such as on-going training. We were also given Yellow Pages compiled by the Chamber of Commerce. We hope it will continue to bring new things in the future." C15

Other respondents expressed the need to strengthen the association so that hoteliers can lobby the government on issues that affect their sector. The following respondents expressed this view as follows:

"Yes, the association is a new association; its members are very few. Now the new hotel star rating will be implemented and we are voicing our concerns, and forming an advocacy group for the hotel sector; we are coming together." C6

"The hotel association is very weak; it should voice its concern on things like a lack of star classification in the country." C13

"It was established a long time ago, they have now organised it in a new way, we are considering becoming a member." C8

6.5 Who supplies ICT products and services?

ETC is the only telecommunications company in the country that provides telecommunications products and services including telephone, fax, and Internet services. The choice is very limited, as one respondent commented about the availability of telecommunication services, one respondent stated: *"the telecommunications company has an absolute monopoly."* Another respondent described the same point as follows:

"In Ethiopia we have one telecoms operator and I do not think that they can provide the service for everyone. In other countries, it would be unthinkable to have a single telecoms operator. The Internet speed is 256KB/ s, but it is less than that." C12

The monopoly is not limited to the telecommunications service; in the hotel sector for example, the software that manages the reservation, check in and check out systems, food and beverage sales, and control system, is supplied by CNET Technologies PLC. The software, CNET, is supplied to hotels by Property Management System (PMS), and is the only software supplier to all hotels except the international chain hotels such as the Hilton and Sheraton.

The CNET software installed in every hotel is directly connected to the Ministry of Inland Revenue. All sales are transmitted live to the Ministry Office for tax collection purposes. The government have given CNET a monopoly to supply, maintain, and provide training on the software, at least for non-international hotels. The following interviewees expressed this view as follows:

> *"In my understanding, CNET initiated the process of supplying software to the hotel business and requested recognition from the government, that is how it started. It is a very active company, I think the government does not know or understand the consequences, or it may be the case that a decision is made to support the company by the government. Now, CNET has the biggest market share of hotel software in Ethiopia." C4*

> *"CNET software diffusion is a result of the government's recognition of this company and also because the government wants it to be used. CNET provides the software, training and maintenance. It connects all the operations of the restaurant, bar and reception. I can monitor what is going on in all areas from my PC, whenever there is a problem." C4*

Many respondents discussed that reporting faults and maintenance of the CNET software is a very sensitive issue. It is only CNET staff that are allowed to install, upgrade, or maintain the software. One of the interviewees explained the relationship between the hotelier and the software supplier as follows:

> *"We call them whenever there is a problem and they sort it out; it costs a lot of money. There is a circular from the government that no-one is allowed to perform maintenance on the system especially on the CNET software. The system is connected to the tax office, and sales are reported directly as they happen. If I want to employ staff to maintain the CNET system, it has to be on a part time basis and can only be a member of staff working for the CNET company." C4*

The Ethiopian government instructed by law all businesses to install and use sales registration machines. The supply, maintenance, and annual servicing of sales registration machines for all businesses are provided by eight companies that were approved to do so by the government (ERCA 2012). Businesses are forced to use the same company that supplied them with sales registration machines, for all maintenance and annual servicing. One hotelier explained the difficulties faced with maintaining these machines by the supplier, Petram PLC. Similarly, as in the case of CNET, only Petram can maintain all the hardware. In addition, hoteliers are not allowed to maintain these machines by law, or allow any third party to maintain them, so only the company that supplies the sales registration machine provides the maintenance and annual servicing. As a result, hoteliers cannot change the maintenance and annual service contract to another supplier, so there is always a waiting list of hoteliers waiting for maintenance or replacement of hardware, and it takes time to get maintenance. Moreover, Petram requires permission and approval from the Ethiopian Revenue and Customs Authority (ERCA) Office to deal with each maintenance request. One interviewee reiterated this view as follows:

> *"If it is hardware, then you contact Petram, which is the single hardware supplier for all hotels authorised by the government. First, Petram will request permission to maintain or change it if the unit is faulty, there is a waiting list for Petram to conduct maintenance, then you have to wait until it is your turn." C4*

Many respondents discussed the lack of competition, which left the hotel sector at a disadvantage in two ways. The first is the lack of competitive pricing for software.

Secondly, the services offered by the service provider are substandard. Though hoteliers pay lots of money for the maintenance of the software system, CNET has shown reluctance in maintaining the system. In the words of two interviewees:

> *"We prefer to have other alternatives other than CNET, there could be a better offer from other suppliers on pricing or services. In fact, because of our lack of staff experience, there were various faults on the CNET system, when we contacted CNET they were quite irritated." C13*

> *"That means they are not able to compete with CNET until now. I do not know, maybe there are no other software suppliers that the government asked to operate here, or there may be something that is on hold, I do not know." C4*

6.6 Which ICT tools are adopted by hoteliers?

Nearly all respondents use ICT in their day-to-day hotel operations and management. For example, they use networked-computer systems to manage their reservations, finance, and administration. All hotel rooms are serviced with telephones and wireless Internet connection. Furthermore, some hotels provide free local and national calls for their customers. There are business centres in the hotel lobbies, providing computers, scanner and printer facilities. There are charges to use these services in the business centre. In addition, some provide secretarial services. It appears that providing free Wi-Fi access to their customers helps them to be competitive. One respondent expressed this view as follows:

> *"The main thing for the hotel is to sell rooms; all other things are value added services for the guest. Even though it adds cost to the hotel, comparing the cost and benefit, we decided to provide it free-of-charge to all our customers, in addition, national phone calls are also free for our guests." C15*

The use of ICTs in hotels is divided into three main areas of operation. The first is managing the core operation of the hotel including the management of communication with customers, management of reservations, check-in and check-out operations and linking this to the food and beverage department and with all

other services provided in the hotel. The second is management of the finance of the hotel. The third is dealing with the management of the administration of the hotel.

However, ICT is used less in other operations such as purchasing, communicating with staff, and with local customers. Traditional methods are used in these cases, such as face-to-face meetings, letters, or mainly mobile phones. Hotels use of fax or letters is mainly restricted to communicating with government agencies and private local organisations.

6.6.1 Mobile phone adoption and use

All respondents use mobile phones; it is the major means of communication for the owners/managers with almost everyone. Mobile phones are used for both social and professional purposes. For instance, owners/managers normally use mobile phones to communicate with their staff, food and beverage suppliers, software and hardware maintenance organisations; one respondent explained the use of mobile phone as follows:

> *"...We establish a communication channel with our customers, we as a service provider, first of all, most of the local organisations use the telephone to enquire about availability of rooms and other services, and then it is confirmed using letters, based on that we provide services." C6*

A large majority of respondents explained that the mobile phone is the preferred means of communication when dealing with their staff, suppliers, and with hardware and software maintenance contractors.

> *"If you are contacting a local person, then you can contact them by telephone. Many people, rather than using the written method of correspondence, prefer to use verbal communication; it is easier to explain verbally than in writing. However, people who reside abroad are bound to use written communication." C7*

6.6.2 Computer adoption and use

The computer is the main component that is required for the implementation of all ICT systems in hotels. Nearly all respondents described the importance of a

computer and the software loaded onto it for their hotel operation. The connections of computers and other network components create a network. The network enables the management, processing and sharing of information in the hotel.

> *"The hotel front office has computers with its own software, the bar, the restaurant and the store are connected via a network." C4*

The software that enables the management of reservations, check-in and check-out operations, finance, payroll and any general administrative tasks are required to be loaded onto computers. The prevalent theme was that computers are adopted to provide accurate and fast services for their customers, and are used to communicate with their customers, in addition to getting information and generating reports on various business parameters such as financial performance, guest numbers, income and expenses. The following respondents summarised many of these points:

> *"....the system we have, the computer and CNET software, enables us to provide accurate and fast services for our customers; furthermore, the system provides us with detailed reports such as when the customer checked-in, how long the customer stayed in the hotel, total amount spent by the customer, so it is very essential for our business." C1*

> *"We use Vestry software for our accounting, the use of a computer system and a manual system is not comparable. The computer system has many advantages; I get about 600 different reports from the system. At the moment, we are trying to integrate the Vestry financial software with the front office software." C13*

Several respondents described how computer systems are used in the management of their hotel operations. The system is used to manage customer reservations, when they will check-in, or when they will check-out, how much they will be charged and any additional charges, such as food and drink, laundry services, personal grooming, or any other services offered, and this information will be stored and retrieved when guests want to pay or managers require reports.

Hence, without these connected networks of computers the management of the system could not be realised. Many respondents compared the computer system with manual operations: another possibility is to use a manual system, which is prone to errors, delays and inconvenient for staff and customers, it is not the preferred way for most hotels; one respondent reflected this view as follows:

> *"It would be very exhaustive, but also you can't control manual systems. It would not be convenient to produce reports, it would be tedious and guests would be annoyed, there is no question about its usefulness, it has impact, you cannot function without a computer network." C6*

When asked if there are any plans to expand the computer network, one respondent points out the following:

> *"We are intending to expand the hotel to satisfy the growing demand and with it the computer network." C14*

6.6.3 E-mail adoption and use

Many respondents expressed how important e-mail correspondence is for the hotel business; almost all communication between hotels and their potential foreign customers is conducted using e-mail. It is used for reservation of hotel rooms, booking confirmation, negotiation on pricing and for all other general enquiries on products and services offered by the hotels. One respondent stated this point view as follows:

> *"Most of our reservations come via e-mail. We respond via e-mail and book the requested room accordingly." C4*

One respondent compared e-mail communication with that of letter correspondence and pointed out the advantages of e-mail communication as follows:

> *"E-mail is a fast communication system compared to a letter. You do not worry like with a letter whether it has been received or not by the recipient. It is fast, if I sent you an e-mail now, you would receive it after 3 minutes. It is the best method of correspondence." C7*

Almost all respondents stated that e-mail correspondence is given particular importance; sufficient resources are allocated to dealing with it. It is considered to be very critical by the respondents, and it was stated by many respondents to have a high impact on the ability of the business to generate income. Many managers spent most of their time making sure that e-mails are responded to in a timely manner, to secure hotel reservations from potential customers. E-mail is critical for hotel income generation. The following respondents stated this view as follows:

> *"Without e-mail, we cannot communicate easily with our guests. Our guests cannot reach us. First, we cannot get customers, as a result, we lose potential income. This creates difficulties for our customers too, they will not be able to reserve a room in our hotel, this will create not only communication problems, but also the whole market will fail, resulting in the loss of income for the hoteliers." C6*

> *"E-mail has a massive impact on our business, if e-mail is not available even for a day, then it has a negative impact on our business." C10*

> *"It has a major impact; there were instances when we were not able to communicate via e-mail. When the Internet is not available in our hotel, we go outside our hotel and check our e-mails in Internet cafés. It has a huge impact on us, if I am unable to check, my deputy will check the e-mail, or otherwise the duty manager will check." C9*

Therefore, the use of e-mail by hoteliers is geared mainly to communicating with their foreign customers; but there are some foreign customers who use the telephone to make a reservation, but the majority of reservations come through e-mail. One respondent emphasised these views as follows:

> *"There are some who will call from abroad to reserve a room but it is very rare. E-mail is the preferred method of room reservation by our customers, but there are instances, faults and difficulties with our own network that makes it difficult to respond to reservation requests on a timely basis. I have to search for ways to respond to the requested e-mail." C4*

The overall theme that was expressed by many respondents was that e-mail communication is used between the hotel and their potential foreign customers. On the other hand, the hoteliers rarely use e-mail to communicate with their own staff, ICT systems providers, or any other stakeholders. There is no e-mail correspondence in hotels between managers and staff or among staff members, and only in limited cases is there any e-mail correspondence between the management team. Most staff are not allowed to have access to computers unless it is required for their role; furthermore, most do not have access to computers or the Internet at home. One respondent stated this point of view as follows:

> *"We only provide personal e-mail addresses for staff who hold the position of supervisor or above. There is nothing that requires management to communicate directly with other staff, we are not even going to ask them why something is not done; we tend to ask their supervisors." C13*

In almost all cases, local customers do not use e-mail to correspond with hotels. According to most respondents, there are not many local customers, as these hotels are not affordable for the locals; the preferred method of communication is by mobile phone.

6.6.4 Wired-broadband adoption and use

Many respondents emphasised the importance of providing Internet access for their customers; it is the single main reason that hotels are able to attract foreign customers. Customers that use the Internet for their work and social communication prefer hotels with Wi-Fi access. Furthermore, in almost all of hotels, it is provided free of charge for all guests. The following respondents described these points of views as follows:

> *"In the current situation many people communicate using the Internet, especially foreigners who reside here communicate with their family via the Internet, and they need the Internet for their work and to communicate with their social networks. If you have not got Internet the foreigners will not come to your hotel." C7*

"It is mandatory to have telephone and Internet facilities in the rooms. If you do not have Internet then it will be very difficult for the business." C7

"It costs lots of money to have wireless access for customers in the hotels, but it is necessary for our work and also to meet customers' demands." C4

"We don't charge our customers for the use of the Wi-Fi system in our hotel. The Internet is very expensive; we pay 5000 Birr per month (approximately £250/month). In the past the government stated that there would be a reduction of the Internet fee, which has never been implemented." C5

One respondent described that local customers do not use the Internet even though it is free to use it in the hotel.

"From our research, guests use the Internet except the "Abesha[10]." The most expensive Internet service is provided by Hilton, so we think that we have to subsidise this service by providing free Internet to all our customers." C6

Other respondents described that customers prefer to book a hotel with Wi-Fi access. Unavailability or faults with Internet services result in many bookings being cancelled:

"The first question from all costumers is whether we have Internet in the hotel. Previously, we had many cancellations because of Internet problems." C1

"When guests call or e-mail to reserve a room in the hotel, almost always, the first question is whether Internet access is available for the customers in the hotel; if there is no Internet, there is no booking." C1

Internet provision in hotels and its impact on booking became a source of competition among the hoteliers. One respondent stated this view as follows:

10

In general, 'Abesha' is a word used to refer to Ethiopians and Eritreans.

"There is competition among the hotels. One of the instruments of competition is to install fast Internet connection for customer use. However, Internet service interruption even for a day results in a high volume of customer check out to go to a hotel with Internet access." C11

6.6.5 Website adoption and use

Respondents talked about the adoption and use of websites, mainly intended to advertise their hotels. Further comments include how websites help to present the products and services offered by hotels, such as pictures of the hotel, address, e-mail, and telephone numbers. The following respondents point out this view as follows:

"It has many advantages; customers who visited our website called us from abroad to reserve a room." C1

"We promote our website by word of mouth, and also we prepare leaflets for others to distribute. In addition to that we strive to promote the website and communicate with our guests, remind them about our website and also ask them to pass it on to others." C6

The websites of the hotels provide a web presence on the Internet and act as a marketing tool. It presents these websites as mainly gateways to attract customers.

"I do not think the website has a deterministic effect on the business. A limited number of people visit it before they make a reservation. It is an information source for customers about the hotel. Many people use the telephone or e-mail to book their reservation. The website is used as a marketing tool." C7

Although having a website appears to be essential for the hotels, it is rarely updated. Discussions with many respondents indicate that, once the website is up and running and providing the basic information about the hotel with e-mail and telephone numbers, there is not much to change. Though there are some hotels that update their websites from time to time as indicated below by two respondents.

“We update our website every six months. We have a plan to show hotel events and activities on the website in the near future, currently it only has pictures, and it states that we provide entertainment.“ C13

“Until now we have not got a schedule to do so, what we had previously was problematic and we do not like it and now we have revamped it and changed it competently, it is new.” C6

In almost all cases, hotel websites do not have online booking. The overwhelming theme was that having an online booking system is very expensive and requires reliable server access at all times.

“The impact of the website is negligible at the moment, because we do not have online booking; however, there are guests that get our e-mail from the website and make a booking through that. We will know its impact when we start using the online booking system. “ C14

6.6.6 Software adoption and use

All respondents use word processing software in the English and Amharic languages. Excel is the most widely used program in most of the establishments. It is used to present financial data and many respondents prefer it because of its simplicity.

Almost all respondents use CNET software to provide front office services in the hotels. CNET is the software that manages reservations, and check-in and check-out operations of guests in the hotels. The installation and use of CNET is a requirement of all hotels to connect to the Ministry of Inland Revenue for tax collection purposes. The following respondents described this view as follows:

“The CNET system is connected to the tax office, and all sales are reported directly as they happen.” C4

“The computer and CNET software enable us to provide accurate and fast services to our customers; furthermore, the system provides us with detailed reports such as what customer use during their stay

in the hotel, the total amount spent by the customer, so it is very essential for our business." C6

Vestry is an accounting software widely used by many respondents. One respondent explained the advantage of using this software as follows:

"We use Vestry software for our accounting; the use of a computer system and a manual system is not comparable. The computer system has many advantages; I get about 600 different reports from the system. At the moment, we are trying to integrate the Vestry financial software with the front office software." C13

6.7 Who are the customers of hotels that have adopted ICT?

The surveyed owners/managers of the hotels indicated that the majority of customers are mainly foreigners. Though there are some local customers, the number is negligible compared to their foreign customers. As the following respondent pointed out:

"We do not have that many local customers, the few are not encouraged to use the Internet, there is a limited use and exposure to the Internet, many of the Internet users are foreigners." C2

The predominant theme among the respondents was that all hotel activities such as advertisements, the facilities, all are made available and geared to attract their foreign customers. One respondent expressed this as follows:

"....we only advertise in English magazines, when we ask ourselves who uses our hotel, our local customers are 0.00% of the total, one factor for this is affordability." C13

The major customers of these hotels are foreigners, they are the users of ICT services in the hotels. Providing wireless Internet services in the hotel becomes an essential element for attracting customers, in almost all the hotels wireless Internet is free for customers. The reason for free Internet services for customers is expressed by one respondent as follows:

"In the first place, you have to have many reasons to attract customers. It does not cost you much if you make it free and as a result it is possible to attract many customers." C7

Most hotel activities, marketing of the hotel and means of communicating with existing or new customers, are facilitated using some ICT tools. All efforts are geared to the services of their main customers, tourists, and visitors. The adoption of ICTs for these hotels is an essential requirement for survival. The following respondents summarised many of these points:

"First, it is essential for the hotel business. It enables us to provide an efficient, fast and reliable method of serving our customers. It is a key for survival for the hotel business; it is the way to provide and receive information to serve clients." C6

"It is very beneficial, it is advantageous and it creates efficiency, you get a fast way of doing business, and it creates order in the way things are done. It creates a strong relationship between the service provider and the customer." C3

6.8 Which ICTs are used in the hotel sector?

The hotel sector has benefited from the ability of ICTs to create systems that are simple, easy to use, and fast. Nearly all respondents discussed how ICT created simplicity in the handling of complicated tasks for hotel staff, enabling them to provide fast and accurate services for their customers. In addition it was said that ICT enabled users to perform complex tasks with minimum error. The ability of ICTs to create ease of use was discussed by many interviewees, and in the words of one interviewee:

"We are reducing cost as a result of the use of computer systems in our hotel, in addition we get an error free operation. When using the computer system, the reduction of manual input of many tasks enables us to run the system with fewer staff than would have been required; this enables us to cut labour costs, in addition it reduces error." C9

Many reasons were given as to how ICT is used in different circumstances; one respondent discussed how different ICT tools are used to communicate with different customers, such as:

"We use e-mail to correspond with our customers and fax is used to correspond with government agencies, whereas, telephone is used to contact staff." C1

Another respondent emphasised the use of ICTs in providing fast and efficient services:

"..... to manually check-in a customer may take up to 30 minutes, it is very hectic; however, using the computer system it only takes 2 minutes now. It is the same when using the manual system to check-out customers as well, even more as it is necessary to ask for the customer's bill from the restaurant, the bar and any other service that is provided and add them all up to get the aggregate bill. When using the computer system the whole bill from the restaurant, bar and any other services is available on the system, it takes a maximum of 3 minutes." C6

6.9 What problems do hoteliers face concerning ICT?

Respondents were asked to discuss the availability of ICT in their area; the main theme that was described by respondents was that there are difficulties in getting ICT products and services from the telecoms operator. There are insufficient telephone lines to satisfy the demand, so there is a waiting list. One respondent described how a new hotel was using a mobile phone on the front desk because of lack of availability of a landline. The following respondent described the problem; the problem is not restricted to ETC but also to the Ethiopian Electric Power Corporation (EEPC). EEPC has a monopoly on the supply, generation, distribution, and maintenance of electricity in the country as well:

"The telecoms operator is unable to provide the service or maintain the existing network. Recently, a new hotel was preparing to launch its service, but there was no telephone line so the owner was using a mobile phone for the front office desk. The electricity authority is not any better either, the hotel cannot get electricity either because the transformer that is going to be used was still in the port in Djibouti " C5

Another respondent described the inability of ETC to satisfy the demand to provide an Internet service to the hotel as follows:

> *"The big problem is that the Ethiopian Telecommunications Corporation has no resources to serve the demand, six months ago we asked them to upgrade the broadband system, and the answer was "we do not have the resources to fulfil your request." We asked them again, a short time ago we were informed that they have the resources to provide the requested service, but they are in the process of implementing that at the moment." C6*

Interruption of telephone and Internet services are a regular occurrence and this is also true for electric power supply. The interruption of telephone services can last for months. However, ETC demand that hoteliers pay their monthly subscription for their telephone or broadband systems; faults are not rectified quickly and when rectified the fault frequently reoccurs.

Nearly all respondents described the problem they faced with poor line quality, unreliable telephones, and broadband lines that create inconvenience for hotel staff and customers; for example, one interviewee described it as follows:

> *"The other is, there is a nationwide problem, the broadband connections crash, and there is no connection. ETC officially apologises, especially if the failure is beyond the ability of ETC to fix it. We inform our customers what the problem is, it is a big problem for our customers, and they are disappointed with the service. We are sorry for the inconvenience caused by this to our customers." C8*

One respondent described the lack of proactive maintenance by ETC, he resorted to maintaining the telephone and broadband lines coming into his hotel using his own hotel staff:

> *"When the telephone lines start giving out a cracking noise, it is a sign that the telecommunications manhole down the road is filling up with water. If the water is not pumped out then service interruption will occur. I send my staff to pump out the water from the manhole. The pump cost me around 7,000 birr (approximately £350)." C5*

Maintenance of the telephone and broadband lines is the responsibility of ETC. Many respondents described that ETC provides speedy maintenance for simple

faults but some faults can last weeks or even months. One interviewee described this view as follows:

> *"The telecoms operator helps us to maintain the line especially if it is a minor fault that can be rectified quickly. There are cases where we had no Internet for a long time. A long time is in a sense for a week. In the hotel environment never mind a week, half a day's interruption is very difficult to deal with, it can be a serious problem. However, minor faults are rectified quickly. "C13*

Internet service is critical for the operation of hotels. If there is no Internet, customers will check-out and move to another hotel where they can get Internet access. Service interruptions happen frequently to many ETC customers, this interruption can last from days to weeks, and sometimes it can last for a few months. Respondents were asked if there was any compensation given by ETC for these service interruptions that last for a long time, at least for a month. A prevalent theme was that ETC never offered any compensation nor did customers demand any. When a respondent was asked if they ever asked for any compensation from ETC for service interruption the response was:

> *"No (laughter….) we also believe that we deserve compensation, even after a long interruption of service If we have not paid the monthly charge the service will be disconnected by ETC. ETC has never offered any refund when we have not had a service for one week or for even months. " C13*

Other respondents discussed the absence of a culture of demanding a refund from ETC in wider society, the emphasis is to get the fault rectified as soon as possible.

> *"We never ask for a refund from the telecommunications company, or they never offer a refund for the service interruption. We have never heard of anyone who got a refund or requested a refund. Even if the line is not working, there will be no refund given or offered." C4*

> *"In the case of telecommunications, we pay a fixed amount for the Internet irrespective of the level of use. We mainly focus on getting the fault fixed as soon as possible, not asking for a refund, what we are saying is one week's interruption is a very long time." C3*

6.10 Why tolerate poor service?

Many respondents discussed the problem of getting good quality service from ETC. Others also raised the issue of ETC's customers being too tolerant of poor quality services or products. One respondent gave two reasons for this tolerant behaviour: the first is the lack of choice in the supply of ICT products and services. The second is because of the culture which has developed as a result of the first reason. Many respondents avoid any confrontation with ETC, it has the power to disconnect users, and respondents are heavily reliant on the Internet to run their businesses, hence respondents tend to tolerate poor services. One respondent talked about this poor services as follows:

> *"You cannot do much, if you say it is expensive or will not pay for the service that I have not received then they will cut the service, at the end of the day, it is me who is going to suffer. Whatever happens, people tend to say it is OK as long as God does not bring any worse thing than what we had already suffered. There is no feeling of 'enough is enough' towards what is happening, but people tolerate whatever unacceptable things, when it happens you will hear the same thing "let God protect us from any other worse suffering" , mediocrity is a virtue. " C5*

6.11 What legal protection do ICT customers have?

Some respondents said that there is a possibility of a new consumer protection law coming into being in the near future; its aim is to protect the consumer from unfair practices. But there is doubt whether the new law, although not yet ratified, would be effective in protecting consumers from government-owned monopoly organisations such as ETC or EEPO. The points that were reflected were that consumers will be able to challenge organisations such as ETC or EEPO without being afraid of service disconnection or other undesirable consequences. This point of view was expressed as follows:

> *"There is going to be a new consumer protection law targeted at the private sector. The expectation is that the spirit of this law can include the services provided by all including the government, 80% of*

the service is provided by the government, the question is: will the government allow this law to be ratified? Will it permit a law that allows citizens to take government agencies to court?" C5

6.12 The use of ICT for acquiring information

Respondents were asked to discuss the use of ICT for acquisition of information in their establishments. Many respondents spoke about numerous government websites. The theme developed from respondents was that the information provided by many of these websites was outdated. The following respondent described the usage and available information on the government websites as follows:

"I search government websites; for example the website of the Ministry of Culture and Tourism, but the information is static." C2

Other respondents discussed the print media, television, and radio as the main sources of information; one respondent described it as follows:

"The government declares new laws and announces them through their "Negaret Gazette[11] ", we get that, in addition we get the information from different media sources such as TV, radio and newspapers." C1

The dominant theme that many respondents described is that the main source of information is face-to-face meetings. Hoteliers have to visit the Ministry Office in person to get information. The following respondents pointed out this view as follows:

"The main point of contact is the Hotel and Tourism Office.in Addis Ababa, in the mayor's office, there is a Hotel and Tourism Sector under the Ministry of Trade, Industry and Tourism, that can be contacted as well. Nationally, the Federal Hotel and Tourism Minister can be contacted, they have promotion and classification departments, and there are also consultants." C5

[11] It is a proclamation announcing paper published by the government of Ethiopia

"The first point of contact is the Investment Office and then next is the Regional Tourism Office, depending on where you want to build the hotel, next, to prepare documents and do feasibility studies you are required to contact the local consultant. There are consultants who collect data for this purpose, for example if you ask a question say about turnover, they assume that you are working for tax office and they will throw you out." C5

6.13 What are the advantages and impacts of ICT?

Almost all respondents discussed the many advantages and the impact of ICT and what they bring to the hotel sector. The discussions on the advantages of ICT focus on mainly its ability to bring efficiency, speed, and reliability to the tasks when serving customers. In addition, respondents discussed the impact of ICT as an essential tool for businesses to survive. The following respondent pointed out this view as follows:

"The technology helps the tasks to be done faster and more easily. It creates convenience for everyone. It makes a huge contribution, especially with regard to speed and convenience." C10

Other respondents raised the issue of using historical data as a planning and forecasting tool to provide better customer service:

"Yes, it has impact on the quality of service, you can provide a fast service to customers, you can refer back to your archive about any historical record and plan for the future, this enables you to provide better customer service to our customers." C16

6.13.1 Competition among hoteliers

There is competition among hoteliers. There are mainly four methods that are used for competitive advantage: the location of the hotels, new versus old hotels (newer hotels have advantages as a result of incentives provided by the government), availability of faster Internet connection in the hotel, and employing experienced staff. The following respondent pointed out the advantage of the location of the hotel.

"Well...., our hotel is far from the centre, we are not the main beneficiary, to talk about the opportunities created. Hotels that are located near the airport are the main beneficiaries. They have a higher level of occupancy and hence higher income; as a result, the government also gets more income, and these hotels employ more people. Our occupancy rate is low compared to them, and some guests check out only because of the distance from the centre. The exchange rate also has an impact on income, when we were building the hotel one dollar was 5 Birr, now one dollar is equal to 13 or 14 Birr, so the income has increased, we have improved and extended our hotel as a result of the increase in our income." C12

Another respondent referred to the advantage of having high-speed Internet as a factor making the hotel competitive. On the contrary, lack of availability of the Internet because of a fault or interruption can cause many customers to check out and move to the nearest hotel that offers Internet access.

"There is competition between hotels. One of the instruments of competition is to install fast Internet connection for customer use. However, interruption of Internet services, even for a day, results in a high volume of customers checking out to go to other hotels that have Internet access." C2

6.13.2 The hotel sector and availability of human resources

The hotel sector is growing because of the liberalisation policy of the government. The number of hotels is increasing, as are job opportunities. However, according to some respondents, the educational establishments are not training sufficiently skilled professionals for the sector. Interviewees indicated that the standard of education in the country has significant problems; a shortage of graduates capable of performing tasks that are expected of them was mentioned in many instances. All graduates are given on the job training so that they are able to do what is required of them. Some interviewees emphasised the importance of languages in the hotel sector and the shortcomings of the education system. Interviewees expressed a typical view as follows:

"In our country the education system is a big problem. Many students do not master the English language, that they need to have a working language ability at least in French, Italian and English. That

is not the case, even for those with a degree in management. The training needs to be based on languages. They do have a lot of language courses, they train them for a short time and showcase them." C8

"To be honest, the education quality is getting worse. In my own experience, the standard is very low compared to what is expected at these levels. Students who are coming to this sector are generally below my expectation." C16

The hotel profession is not highly regarded in society; as a result, it is not the choice of many students. It is not the first choice of study when students go to university. Though there are only two government-run hospitality education institutions in the country, with very limited space, many students going to these schools are not really interested. An interviewee stated the view as follows:

"The other important point, are students who are joining the industry interested? In most cases the hotel profession is not highly regarded in society, the education is not considered to be as important as other fields and the profession is considered not to be important, it is considered to be like housework. Therefore, it is not the first subject of choice of many people when they go to university. C13

When students pass their matriculation examination[12], the Ministry of Education allocates university places to students who pass the examination. The allocation is based mainly on the students' results and available university places. Each student selects their preferred subject area(s) to study and which university to go to. Unfortunately, hospitality is not the first choice for many students; as a result, many students will be allocated to study hospitality when it is not their preference. One respondent raised this issue with regards to the effectiveness of these graduates who went the university without any interest in the subject. One respondent expressed this view as follows:

"The government allocates students to study in the hotel sector irrespective of their interest (in the subject); that has huge effect on

[12] In Ethiopia, universities accept students who pass the national exam after completing grade 12.

the outcome. During my study at university, there were a number of students who were assigned to study hospitality courses without being interested in the subject, but still joined the course because of lack of any alternatives. It is doubtful how effective these graduates will be in the job. This is now very difficult as the number of hotels is increasing and there are few staff available to hire." C15

The solution by some hoteliers is to train staff from other fields.

"When we hire staff to be receptionists, they do not need to have a degree, but even with a degree, they are unable to perform as required. When we recruit we tend to put more emphasis on experience than education. The other option we took at, is that they can be a graduate of any subject, say like biology, but have no idea about the hotel operation. We recruit these students and train them from scratch, this is a huge investment, you can imagine the effort and training that goes into this. We do this because we are experiencing great difficulties. It is OK if the person doesn't have the background and knowledge about the hotel operation, but at least they have enthusiasm and willingness to learn on the job. These types of people do not come to the sector. Despite the difficulties, after giving consideration to the level of education we focus on the trainability and personality of the candidate to join the hotel. This requires a lot of investment in training." C13

However, the hotel sector is by nature a labour intensive sector, from preparing food, to making tea, managing the booking or the accounting process, all require manpower to execute and provide the service required by guests. It also creates job opportunities for both the educated and for the less educated members of society. This view was stated by one of the interviewees as follows:

"In the case of generating employment, currently the job opportunities for graduates are nearly zero in other sectors. Now, the demand for graduates and certificate holders is high, especially in this sector." C14

"... the other is employment opportunities, and for society, in all sectors, create jobs for the educated as well as for the uneducated." C10

The hotel sector creates many job opportunities but the introduction of ICT tends to reduce the requirement for staff in a hotel. The effect of adopting technology is

that it automates repetitive tasks and assists in creating efficient operations. As a result, it tends to reduce staff numbers; one respondent expressed this view as follows:

> *"Well, in my opinion, if we have a hundred per cent of the operation using technology, it requires skilled labour, its effect would reduce the number of staff, it may be able to do a very satisfactory job, to improve further and do a better job, the technology is a vital component. You reduce unnecessary manpower, the main activities would be supported by technology, say for example, a waiter doesn't need to go to the kitchen to fetch the food, the food will be ordered from the restaurant and food will be sent by lift and it will be served in the restaurant." C11*

6.14 Conclusions

The preliminary findings indicate that ICT is provided in a monopolistic environment. These monopolistic organisations provide telecommunications, electricity, ICT hardware, and software systems. The monopolistic environment creates shortages, expensive products and poor service. This is having a negative affect on ICT diffusion. However, government policies to encourage investment in the hotel sector increase the number of hotels that adopt ICT. The lack of legal protection coupled with cultural acceptance of poor service affect diffusion, but the major negative factor is the monopolistic market structure for telecommunications, electric power, software and hardware in the hotel sector.

The major ICT diffusion facilitating factor, at least for the hotel and tour operator business, is the demand from their main foreign customers. These foreign customers have access to the Internet in their home country, their social and leisure activities, and professional communications and work are facilitated using the Internet; to attract these customers hoteliers adopt broadband and install Wi-Fi systems.

Lack of availability of the Internet even for a day in hotels can trigger a mass exodus of customers from the hotel to any other hotel that has an Internet connection. It is not only essential to have Internet in the hotel, but also it is critical that it works at all times. A fault in the system will result in a loss of income for hoteliers. It is the single most important factor that plays a critical factor in the adoption process of ICT. Furthermore, unavailability of e-mail access for the owners/managers, and not being able to respond to any booking request on a timely basis may result in loss of booking; hence adoption of e-mail and its continued availability is critical for the survival of the business.

The main resistance factor to ICT adoption is the lack of competition in the telecommunications sector in the country. Having a single telecommunications operator that is unable to satisfy the growing demand and at the same time charge premium fees for a substandard service is a resistance factor for diffusion. The effect is more pronounced because of having a single software supplier and single hardware supplier for the majority of these businesses.

This has resulted in uncompetitive pricing by the monopoly operators compounded by poor service; in extreme cases these organisations become very powerful and their practices are open to abuse. There is no legal protection for small and micro businesses against these powerful organisations. This then develops into a cultural tendency to accept inferior service, in the worst case scenario, end up paying for services that are not offered by the service providers. Any customer challenging this behaviour may end up having no services from the service provider, for this reason many shy away from demanding their right in a court of law.

The shortage of trained staff in the hospitality industry is exacerbated by two factors. The first is the limited number of higher education institutions that train a limited number of students. The second is the growth of the hotel sector in the country which creates a high level of demand for trained staff. The overall result is

an unmatched demand of the sector resulting in higher salaries demanded by trained and experienced staff.

Item	Factor
Sector growth	• The hotel sector is growing as a result of positive government policies, including tax free incentives and opening up the sector to private investors.
Hotel growth	• As a result of positive policies the number of hotels has increased, as has competition among these hoteliers.
Adoption factor	• The main factors for the adoption of ICT in the hotel sector are the demand from their major foreign customers, and competition among the hoteliers.
Monopoly of telecoms sector	• Monopoly of the telecommunications service has resulted in poor infrastructure, unsatisfied demand, very high prices of telecommunications services. It acts as a resistance factor to adoption.
Monopoly of software supply system	• There is one software supplier to all hotels except the 5 star ones. It is very expensive, but hoteliers have no choice of using any other system. The software connects the hotel to the Inland Revenue for tax collection purposes. Maintenance of this system by law is conducted by the only software supplier; it is a criminal offence to allow anyone else to maintain the system. • The lack of competition has resulted in a very high price of software for hoteliers.
Adopted ICTs	• The interviewed hoteliers had adopted mobile phones, computers, broadband with Wi-Fi, and website and e-mail systems in their establishments.
Website adoption	• All hoteliers have basic websites that provide telephone, e-mail, and pricing information. There are no online booking systems, it is expensive, and hoteliers' servers are not available at all times as a result of poor infrastructure.
E-mail adoption and use	• E-mail is critical to the operation of the hotels. All correspondence with their primary customers, foreigners, is conducted by e-mail, such as provision of information, pricing information, and booking confirmation. • If there is no Internet available in the hotels, managers or deputy managers spend most of their time in Internet cafes replying to customers' requests.
Wi-Fi in hotels	• Having Wi-Fi is mandatory for these hotels to attract their foreign customers, if there is no Wi-Fi in the hotels, customers check-out, and move to other hotels with Internet

	access. • There are interruptions in Internet services in hotels as a result of poor telecommunications infrastructure, and at times it takes weeks or sometimes months to fix the problem. • The Wi-Fi system is critical for the operation of hotel systems.
Monopoly and hardware supply	• There is one hardware supplier for all hotels; the ICT system includes a point of sale system and printers. Currently the number of hardware suppliers has increased to eight. By law it is the hardware supplier that provides maintenance, so once a hotelier buys hardware from a supplier, the annual servicing cannot be done by any other hardware supplier.
Information acquisition using ICT	• The non-availability of information on the government website, the absence of information resources accessible by ICT, and the problem of poor infrastructure have resulted in slow or no connection, and have not facilitated the use of ICT for the acquisition of information by hoteliers.
Poor quality services from service providers	• Hoteliers have to tolerate poor services provided by monopoly companies such as ETC, EEPC. • There are no alternatives, and these services are essential for hoteliers. • As a result it becomes normal to accept poor service.
Competitive advantages	• New hotels have competitive advantages, the tax free incentive enables them to bring new technology to their hotels while old hotels are struggling to renovate their hotels as the tax makes it unaffordable for these hotels. • Having a fast Internet connection is one of the major technologies that provides competitive advantage to hotels.

Table 6-1 Findings of the first phase of the study

Chapter 7 Second phase data findings

7.1 Introduction

This chapter presents the results of the analysis of the data collected during the second phase of the research. In this phase, data were collected from both adopters and non-adopters of ICT, from owners/managers of hotels (n=128) and tour operators (n=57). It presents the factors for adoption and non-adoption of computers, broadband, e-mail and website technology in these businesses.

All questionnaires were administered orally, on a face-to-face basis. Two hundred and twenty six hoteliers were approached, 75 were not surveyed for various reasons and 23 refused to participate. The total non-response was 98, so the response rate was 57%. In the case of tour operators, 118 establishments were approached, 33 were not surveyed for various reasons and 24 refused to participate, this provides a response rate of 48%.

The findings presented below are for both hoteliers and tour operators. They give an insight into the similarities and differences between tour and hotel businesses. The demographic data findings are presented, and are followed by the perception of ICT knowledge and experience by respondents in their respective businesses. This is followed by details of what ICT tools were adopted and how these were used in the establishments. Respondents were asked to say how they sought information. The survey also aimed to find the major and minor reasons that influence the adoption or rejection of these ITC tools. These findings are presented in tables and charts to provide clarity.

7.2 Background of the surveyed hotel and tour operator owners/managers

The findings presented in this section provide information about the background of the surveyed hotel and tour operator owners/managers, including gender, age, highest attained level of education, sector specific education, work experience,

hotel classification, number of staff, and number of hotel rooms in the establishments.

The data indicate that 81% of the owners/managers in the surveyed hotels are male while 19% are female, whereas, in the case of tour operators, 53% of the surveyed owners/managers are male and 47% are females. Finding owners/managers of tour operators proved difficult, this is because many of the owners/managers were out and about with their customers. These owners/managers travel with their customers to areas where tourist attractions are located; for this reason data were collected from deputy managers who are responsible for running the business. The data, particularly in the case of tour operators, may not reflect the true situation concerning gender.

The age distribution of owners/managers in the surveyed hotels is shown in Chart 7-1 below. It shows that the majority of the hotel owners/managers are in two age groups, 21-30 and 31-40, representing 43% and 29.7% of respondents respectively. The 41-50 age group represents the third largest group, accounting for 12.5%, whereas the 51-60 age group accounted for 9.4% of respondents, and the under 20 age group represents 1.6% of the respondents. The above 60 age group represents 3.9% of the respondents.

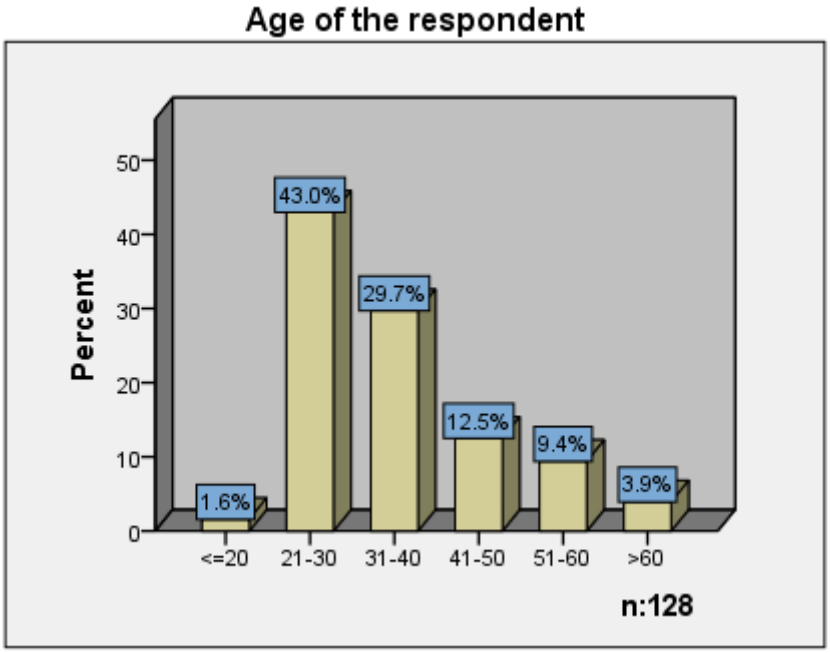

Chart 7-1: Distribution of hotel owners/managers by age

In the case of tour operators, the age distribution is shown below in Chart 7-2. The data indicated that the majority of the owners/managers are in two age groups: the 21-30 and 31-40 groups, representing 58% and 25% of respondents respectively. The 41-50 age group is the third largest group with 12%, followed by the 51-60 age group with 4% while the above 60-group represents 2% of the total sample. Both surveyed groups, hoteliers and tour operators, are dominated by two age groups: 21-30 and 31-40, and amount to 75% and 83% of total respondents respectively.

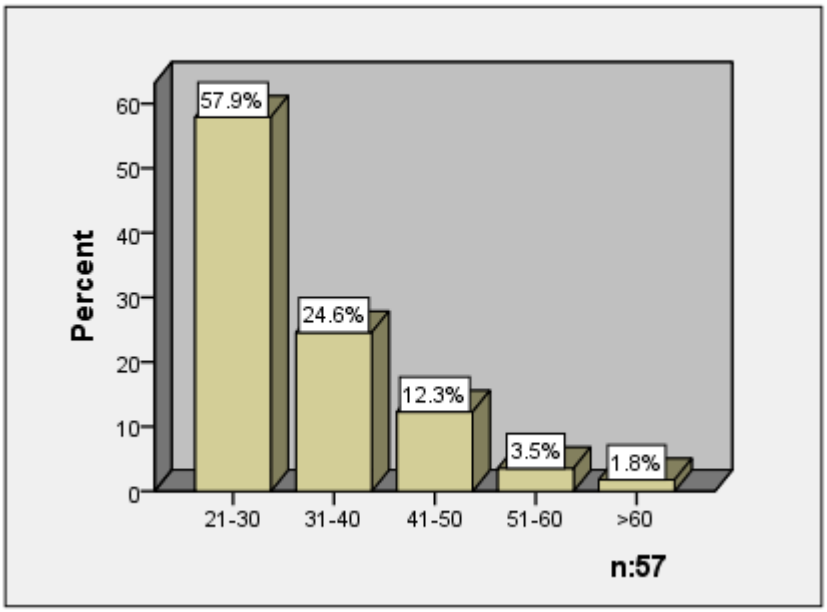

Chart 7-2: Distribution of tour operator owners/managers by age

Chart 7-3 below shows the highest level of education attained by hotel owners/managers in the respondent group. The data indicated that 45% of respondents had completed secondary education, followed by 23% who had a university diploma and 12% with primary education vocational skills followed by university graduates at 10%. The lowest levels were recorded for respondents with no formal education and not able to read or write at 2% and postgraduate levels at 1%. The data show that most of the managers/owners in the hotel sector have some sort of formal education, 51% have secondary or vocational education, and 33% have a university education.

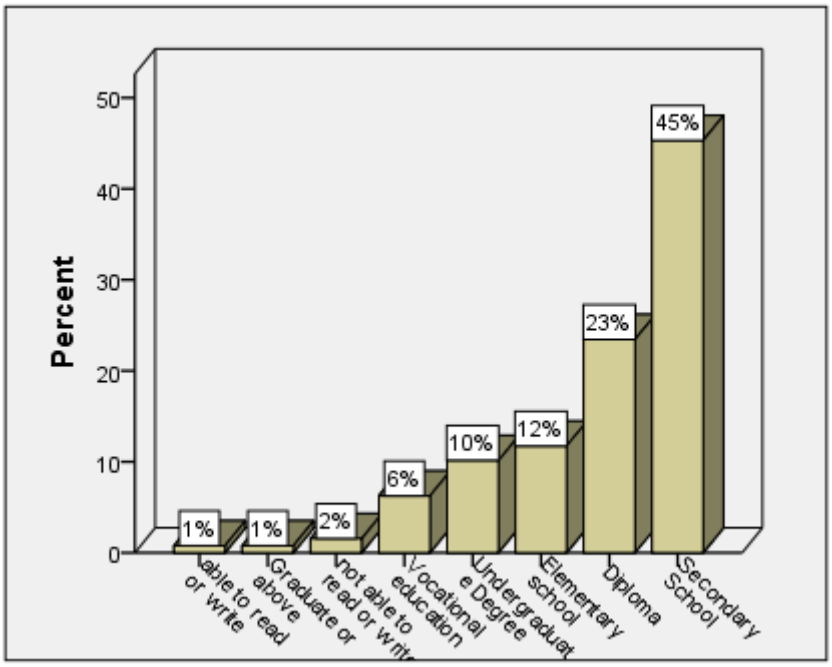

Chart 7-3 Level of education of hotel owners/managers

The education level of tour operator owners/managers is shown below in Chart 7-4. The data indicate that the majority of respondents (53%) are graduates followed by diploma graduates (30% of the respondents). 14% of respondents have degrees or higher qualifications, followed by vocational education and secondary education both with 2% of the sample population. The results clearly show that tour operator owners/managers are more educated compared to hotel owners/managers.

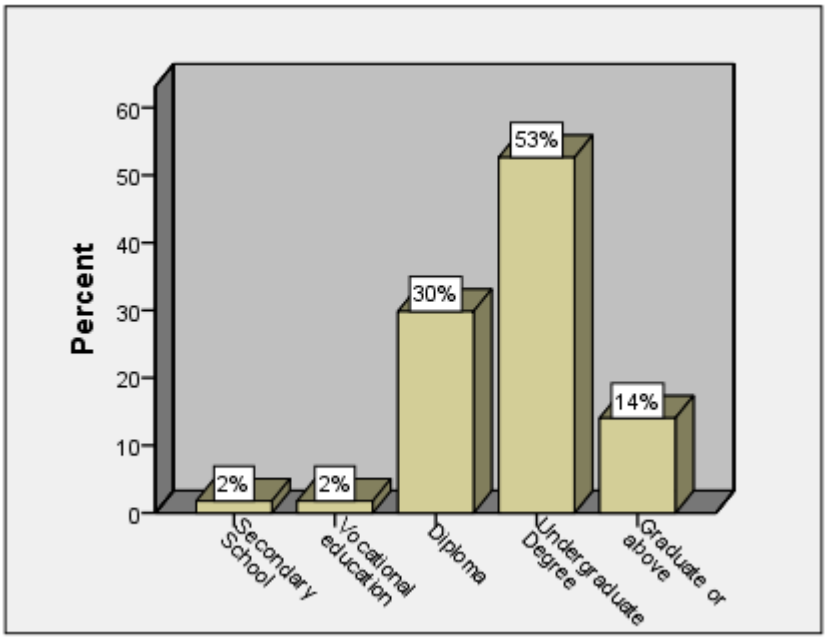

Chart 7-4: Level of education of tour operator owners/managers

Research participants were asked to indicate if they had sector specific education. The data indicate that 26% of respondents had some level of education about the hotel sector. However, the majority, 74% of the respondents, had no specialised education on the sector.

Nearly half (49%) of tour operator respondents have prior education about the sector. The other half of the respondents have no prior education about the sector (51%). From the two surveyed groups, tour operator owners/managers have a higher proportion of sector specific education (49%) than hotel owners/managers (25%).

The data on the experience of running hotels, as illustrated in Chart 7-5, showed that 45% of respondents have more than 10 years' experience and 18% have experience between 5 to 10 years followed by 20% with 1 to 3 years of experience. The lowest levels were recorded for experience of less than a year at 5% and for experience between 3 to 5 years at 13%.

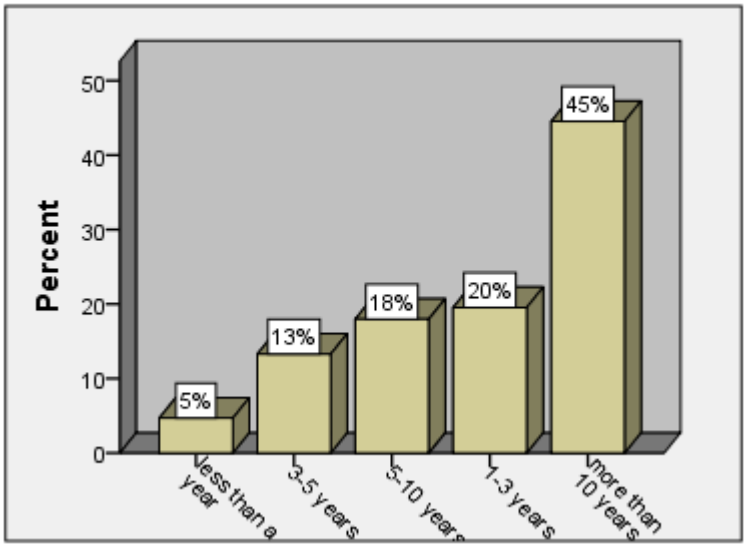

Chart 7-5: Hotel management experience of respondents in years

Chart 7-6 below shows the experience of tour operator owners/managers in years. The data indicate that 39% of the respondents have experience of between 1 and3 years, while 23% of the respondents have 3–5 years of experience. Respondents with 5-10 years of experience amount to 16%, while both respondents with more than 10 years' experience and less than one year experience each amount to 11% of the respondents.

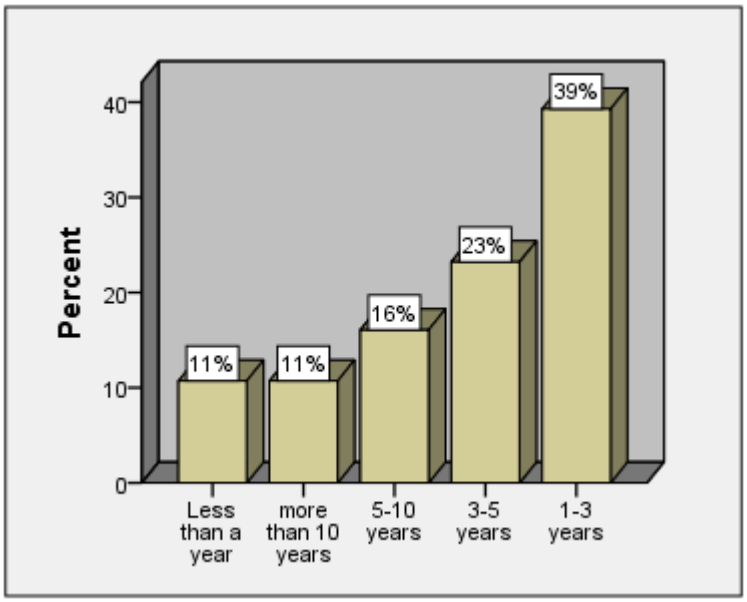

Chart 7-6: Experience of tour operation in years of respondents

Comparing the length of experience of hoteliers and tour operators the data indicate that hotel owners/managers have many years of experience (47% more than 10 years) compared to tour operator owners/managers, only 11% of whom have experience of more than 10 years.

Chart 7-7 shows that the majority of the hotels, 49%, were established between 1991 to 2005 and 24% between 1960 and 1975. Hotels that were established between 1976 and 1990 consist of 14% of the sample and 12% of the hotels in the survey were formed before 1960.

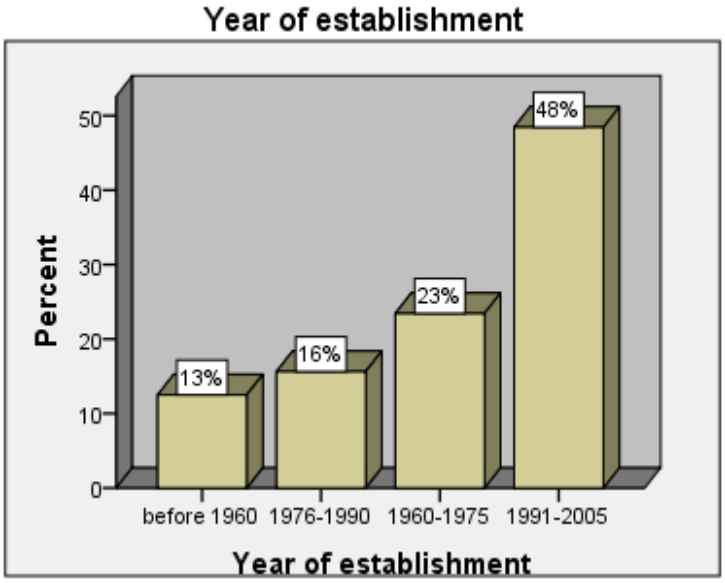

Chart 7-7: Year of establishment of hotels

The chart shown below in Chart 7-8 indicates that most of the surveyed tour operators, 66%, were established between 1996 and now, whereas 21% of the tour operators started business between 1986 to 1995, and only 7% of the businesses were established between 1976 and 1985.

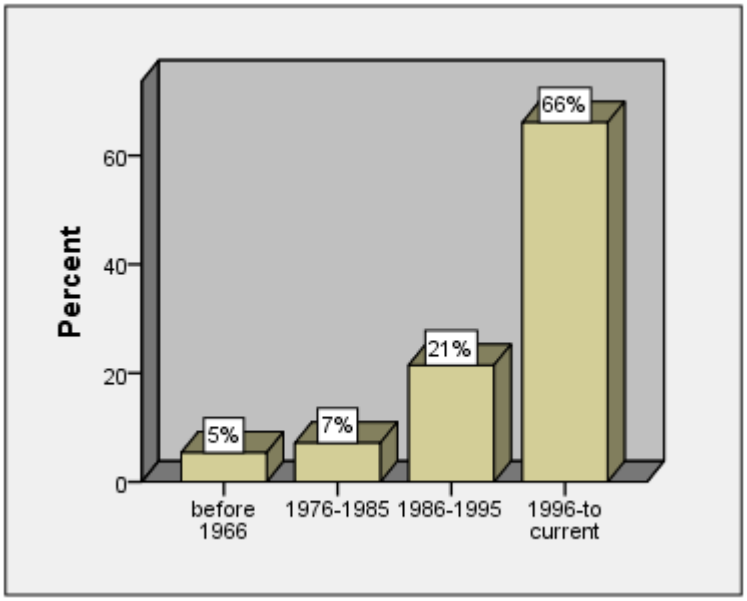

Chart 7-8: Year of establishment of tour operators

The data in Chart 7-9 indicate that 89% of the hotels have no star classification, 4% are three star hotels, 2% are four stars and above, and new hotels that are still waiting for their star classification account for 2%. Hotels with 2 stars are represented by 2% of respondents and 1% are one star hotels. The greatest proportion of hotels, 90%, are small to micro hotels serving mainly local communities.

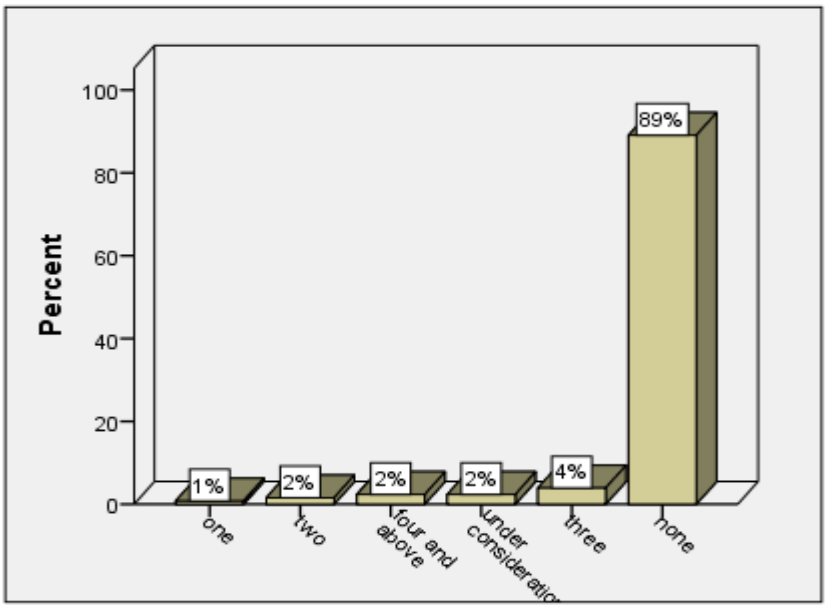

Chart 7-9: Star classification of hotels

The respondents were asked to indicate the number of staff they employ in their hotels. As presented in Chart 7-10 below, the largest number of hotels, 38%, have between 10 to 25 staff, followed by 29% that have less than 10 staff. The third largest group, 26%, have between 26 to 50 members of staff. The lowest level, 2%, was recorded for hotels with 51 to 75 staff, while hotels that employ between 76 to 100 staff, and hotels that employ more than 100 staff, both accounted for 3% of respondents. The results indicate that majority of the hotels, 67%, have a staff headcount of 25 or less, representing micro and small businesses.

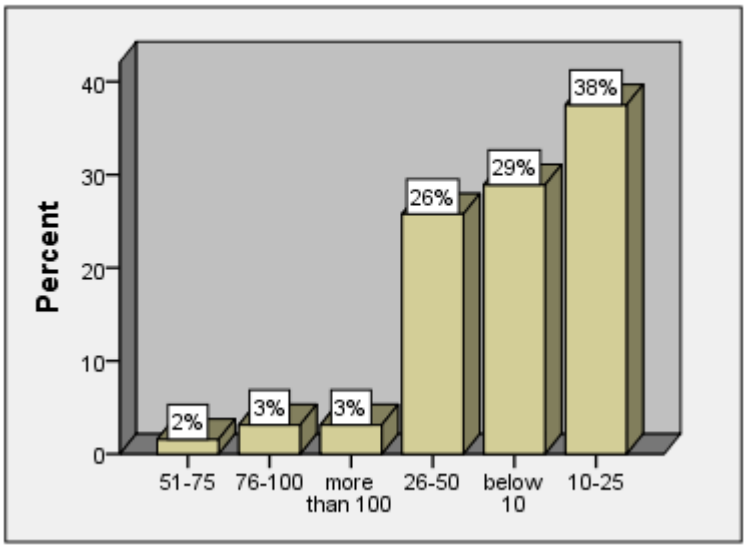

Chart 7-10: Hotel staff headcount

The distribution of tour operators' staff numbers is shown below in Chart 7-11. The data indicate that the majority of tour operators, 68%, have less than 10 staff members. It also indicates that 25% of the surveyed tour operators have staff numbers between 10 and 25, followed by 5% who have staff number between 26 and 50, and 2% of the surveyed tour operators have more than a hundred staff members.

The data indicate that, in the cases of both hoteliers and tour operators, the majority employ less than 25 staff, the proportions are 67% and 93% respectively. In both cases, the majority surveyed are small and micro businesses.

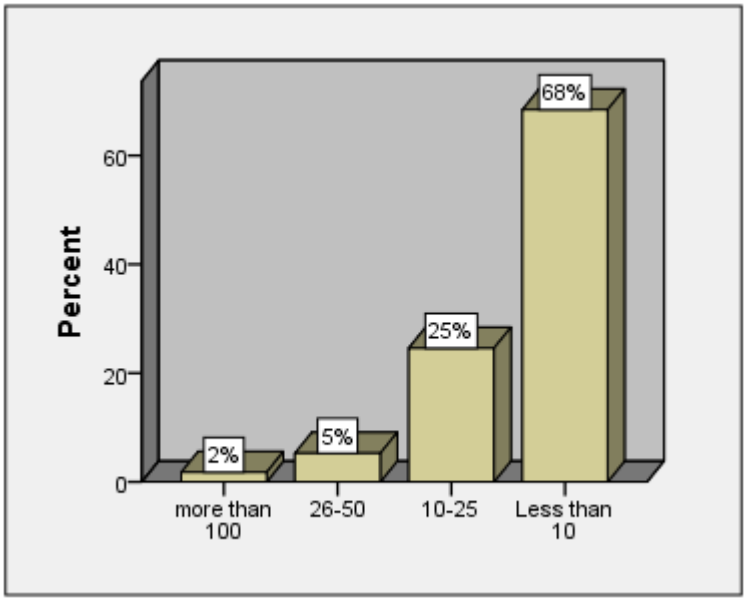

Chart 7-11: Tour operator staff numbers

The study also sought to establish the number of hotel rooms available for customers to book. The data in Chart 7-12 below show that 58% have 15 rooms or less, 35% have 16 to 50 rooms, and 3% have from 51 to 75 rooms, followed by 2% that have 76 to 100 rooms and 2% have more than 100 rooms. The data indicate that more than half of the surveyed hotels have less than 15 rooms.

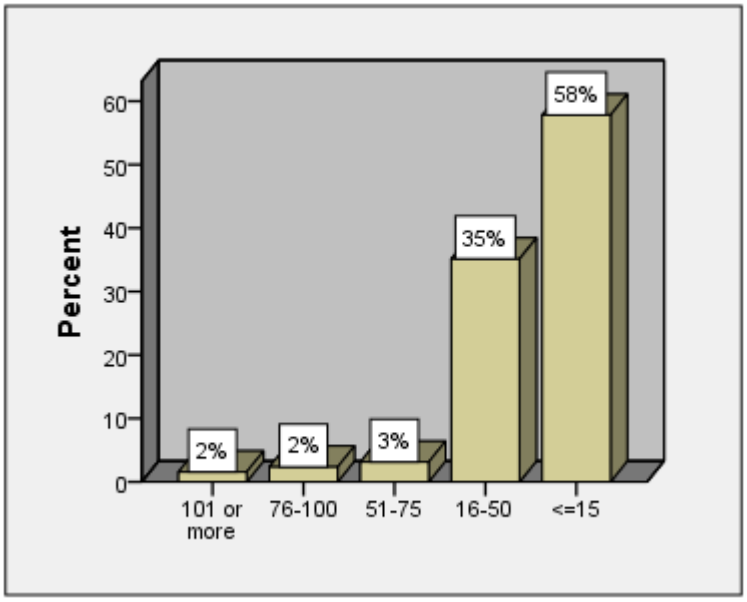

Chart 7-12: Number of rooms in surveyed hotels

7.3 Perception of ICT knowledge of owners/managers

ICT knowledge is important to SMBE owners/managers, it creates awareness of the available technology, helps them to adopt it and use it strategically to sustain and grow their businesses. Businesses require different ICT tools for various operational tasks; matching these operational requirements to the ICT technology requires that owners/managers have an understanding and knowledge of such systems. According to Rogers' (2003) theory of diffusion of innovation, one has to have awareness of the innovation first, followed by the 'how to' knowledge, how the innovation is used, what quantity is required, what skills set are required before adopting the innovation. In order to get an insight into the awareness and knowledge of ICT tools of hotel owners/managers, they were asked about their knowledge of ICT tools. The three ICT tools that were investigated were knowledge of computers, the Internet and websites.

Computers are used to run hotel operations such as bookings, accounting, purchasing, banking, and many other hotel operations. It is also used to provide

services and security in the hotel. Internet services such as wireless communication are a necessity for many hotels to attract new customers while retaining existing ones. Websites are used by many hotels for two purposes: they are used as a marketing tool for the hotel and at the same time they secure hotel bookings.

7.3.1 Perceived computer knowledge of hotel managers/owners

The data, see Chart 7-13, indicate that 55% of the surveyed hotel owners/managers consider themselves as having no knowledge of computers, while 24% are self-taught followed by 15% who gained knowledge through formal education and 3% from the work environment, and 3% earned their knowledge of computers from other sources. More than half of the surveyed hotel owners/managers had no knowledge of computers; they may be aware of their use, however, to adopt them in the business, some level of knowledge is essential.

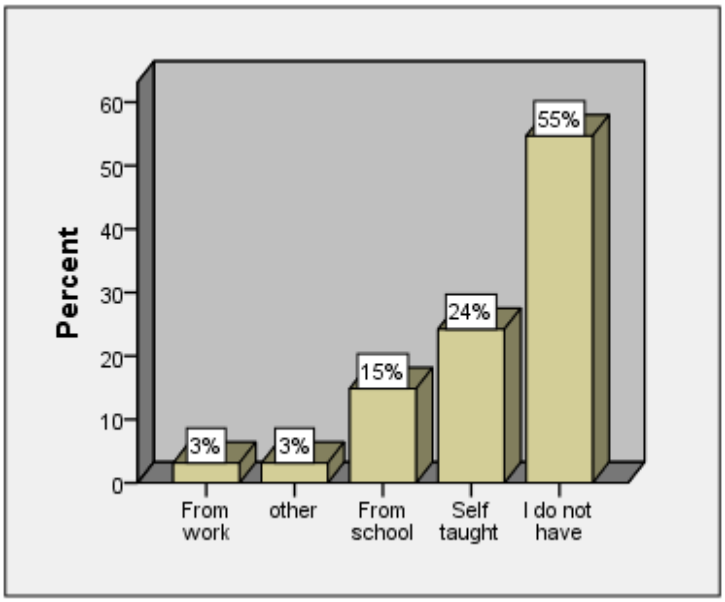

Chart 7-13: Hotel managers/owners perceived knowledge of computers

7.3.2 Perceived computer knowledge and source of knowledge of tour operators

The data indicated that all tour operators had some level of knowledge of computers. Almost half, 49%, got their knowledge from school, while 32% taught themselves, 18% learnt from work, while 2% got their knowledge from other sources. The data also indicate that tour operators have some level of perceived knowledge about computers. The perception of the level of knowledge about computers shows no gender variation.

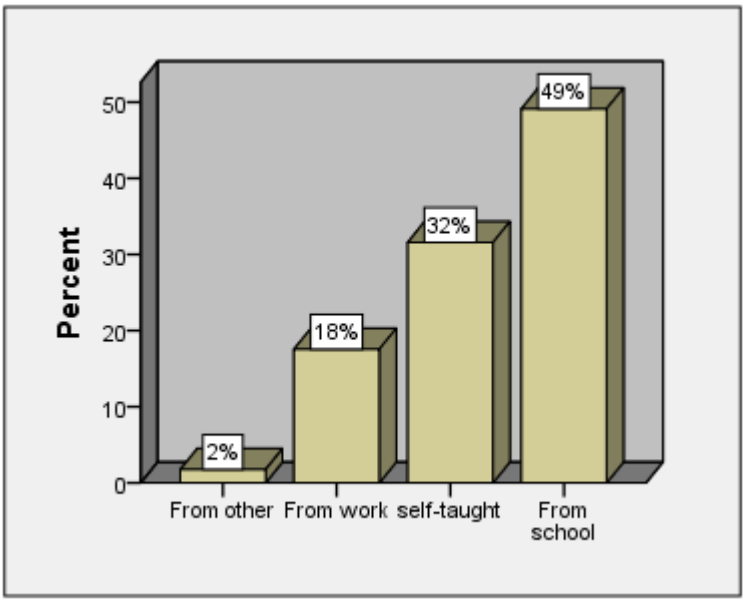

Chart 7-14 Perceived knowledge and source of knowledge of computers of tour operators

7.3.3 Perceived Internet knowledge and source of knowledge of hoteliers

Chart 7-15 indicates that 60% of hotel owners/manager respondents had no knowledge of the Internet, 25% were self-taught, and 9% learnt at school, 3% had a formal education and 3% gained knowledge from other sources. This is a further indication that there is a knowledge gap about this technology among hoteliers. To get further insight into this, the data was analysed using cross tabulation to see if

the respondents perceived knowledge is related to the education level of the respondents.

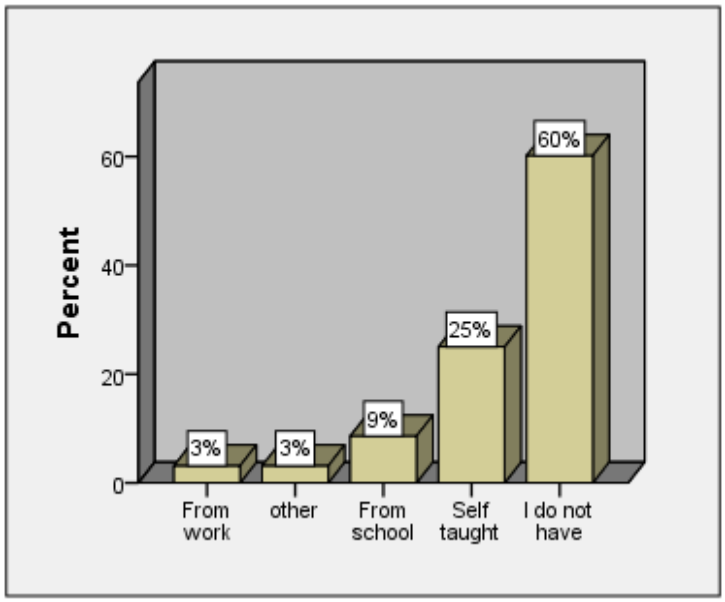

Chart 7-15: Perceived knowledge and source of knowledge of Internet of hoteliers

The data indicate that, as shown below in Table 7-1, there is a variation in the perception of Internet knowledge between the genders. A higher proportion of male respondents (66.3%) did not have knowledge compared to female respondents (48.1%). There is no gender variation on how the perceived knowledge was acquired.

			I do not have	Self-taught	From school	From work	other
Gender of the respondent	Male	Knowledge of Internet of the respondent	66.3%	15.0%	4.0%	10.0%	5.0%
	Female	Knowledge of Internet of the respondent	48.1%	19.0%	15.0%	15.0%	4.0%

Table 7-1: Perceived knowledge of hotel owners/managers of broadband versus gender variation

7.3.4 Perceived Internet knowledge and source of knowledge of tour operators

The data shown in Chart 7-16 below indicate that many tour operators taught themselves about the Internet (45%) and 34% of the respondents got their knowledge from school, while 21% acquired their knowledge from work.

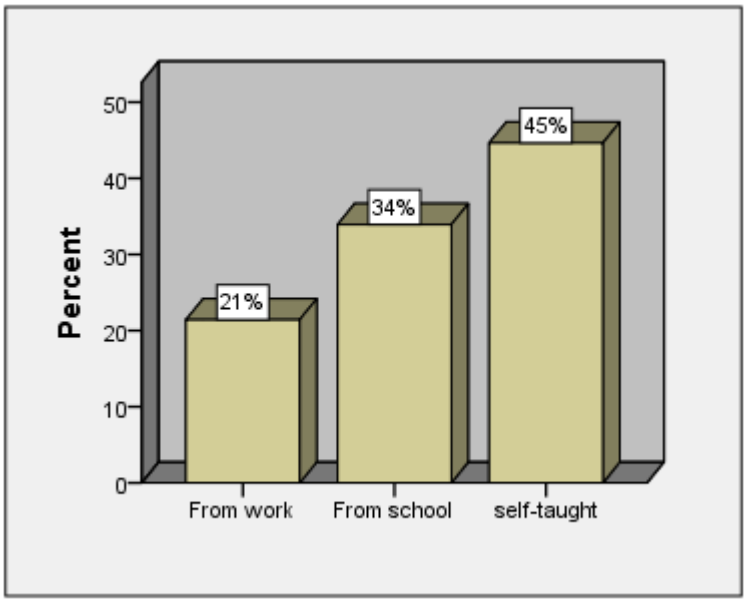

Chart 7-16 Perceived knowledge and source of knowledge of Internet of tour operators

The data shown in Table 7-2 indicate that for tour operators there is no gender variation in the perception of Internet knowledge.

		Main means of acquiring knowledge about broadband				
		Self-taught	From school	From work	From other	I do not have
		Row N%	Row N%	Row N%	Row N%	Row N%
Gender of the respondent	Male	48.3%	34.5%	17.2%	0.0%	0.0%
	Female	40.7%	33.3%	25.9%	0.0%	0.0%

Table 7-2 Perceived knowledge and source of acquiring Internet technology of tour operators by gender

7.3.5 Perceived website knowledge and source of knowledge of hoteliers

The perceived knowledge of website technology by hotel owners/managers is almost similar to that of Internet knowledge; 62% had no knowledge, followed by 24% were who self-taught, 3% gained their knowledge in the work environment and 9% from formal education.

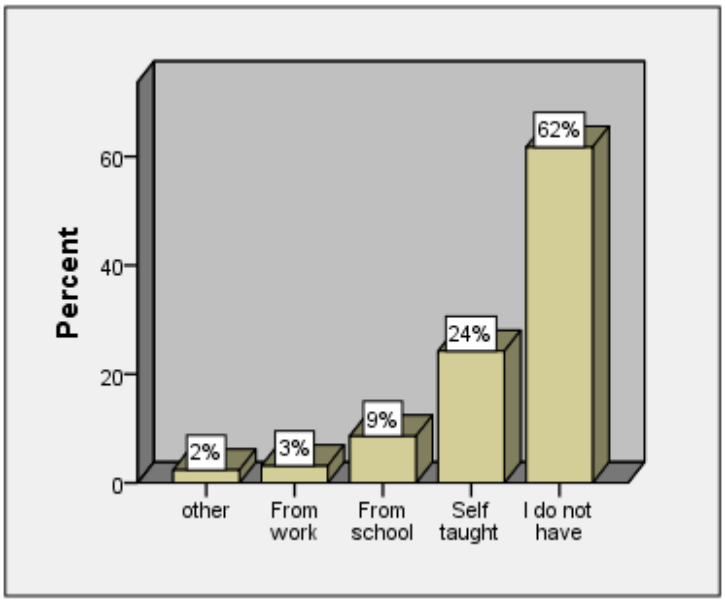

Chart 7-17: Perceived knowledge and source of acquiring website technology by hotel owners/managers

The gender variation of perceived knowledge of hoteliers about websites is shown below in Table 7-3. The data indicate that male respondents had a higher proportion of lack of knowledge of websites (66.3%) compared to that of female respondents (48.1%).

			I do not have	Self-taught	From school	From work	other
Gender of the respondent	Male	Knowledge of Internet of the respondent	66.3%	16.0%	3.0%	12.0%	3.0%
	Female	Knowledge of Internet of the respondent	48.1%	19.0%	15.0%	15.0%	4.0%

Table 7-3: Hoteliers perceived knowledge of website versus gender

7.3.6 Perceived website knowledge and source of knowledge of tour operators

The data shown below in Chart 7-18 indicate that 42% of respondents are self-taught on website technology, while 33% got their knowledge from school and 25% acquired their knowledge from work.

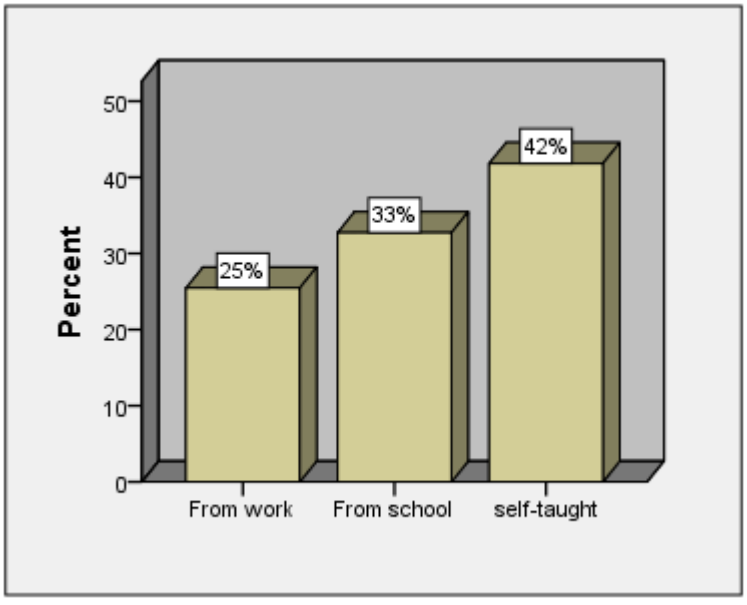

Chart 7-18 Perceived knowledge and means of acquiring website knowledge by tour operators

7.4 What ICT tools are adopted in the hotel and tour operator business?

The data collection focused on finding out about the adoption and non-adoption of the following ICTs tools: mobile phone, computer, broadband, and website technologies. Furthermore, data collection also included the use of e-mail, hotel management software, word processing and Excel applications software.

7.4.1 Mobile phone adoption and use

The data show that all hotel owners/managers have adopted mobile phones. Almost all respondents say that mobile phones are used both for social and professional purposes. Tour operators raised the problem of mobile phone coverage outside big cities.

7.4.2 Level of computer adoption by hoteliers and tour operators

To establish the level of computer adoption, participants were asked about computer ownership in their businesses. As shown below in Table 7-4, the data indicate that 64.8% of the hoteliers do not own a computer and only 35.2% use a computer in their business. All tour operators use computers in their businesses.

		Frequency	%
Hoteliers	yes	45	35.2
	no	83	64.8
	Total	128	100
Tour operators	yes	57	100

Table 7-4: Ownership of computers by hoteliers and tour operators

In the case of hoteliers, the size of the establishment measured by the number of staff in the organisation indicates that the size of the organisation affects the

adoption of ICT. As shown below in Table 7-5, 100% of hotels in the survey that have 76 staff or more own a computer; as the number of staff decreases so does the ownership percentage.

Number of staff in the establishment *Do you have computers in your business?' cross tabulation

			Do you have computers in your business?		Total
			yes	no	
Number of staff in the establishment	below 10	Count	3	34	37
		% within number of staff in the establishment	8.1%	91.9%	100.0%
	10-25	Count	13	35	48
		% within number of staff in the establishment	27.1%	72.9%	100.0%
	26-50	Count	21	12	33
		% within number of staff in the establishment	63.6%	36.4%	100.0%
	51-75	Count	0	2	2
		% within number of staff in the establishment	0.0%	100.0 %	100.0%
	76-100	Count	4	0	4
		% within number of staff in the establishment	100.0%	0.0%	100.0%
	more than 100	Count	4	0	4
		% within number of staff in the establishment	100.0%	0.0%	100.0%
Total		Count	45	83	128
		% within number of staff in the establishment	35.2%	64.8%	100.0%

Table 7-5 Staff number of hotels vs computer ownership

The data in Table 7-5 indicate that the size of the organisation is a factor in the adoption of computers. The proportion of hoteliers that adopt computers increases as the number of staff in the organisation increases. For hotels with staff numbers below 10 it is 8.1%, it increases to 27.1% for staff numbers between 10 and 25, and then goes on to increase to 63.6% for staff numbers of 26-50. Two hotels with

staff numbers between 51 and 75 did not adopt computers, stating that there is no need to change from manual paper to computers. The other two groups with staff numbers of 76-100 and more than 100, all have adopted computers. From the data it can be inferred that as the number of staff in the organisation increases so does the adoption of computers in the organisation.

7.4.3 Adoption of broadband by hoteliers and tour operators

The data indicate that only 14.8% of the hoteliers have adopted broadband, and the majority, 85.2%, have not adopted broadband. The data in the case of tour operators indicate that 98.2% use broadband in their businesses and 1.8% have not adopted this technology.

		Frequency	%
Hoteliers	yes	19	14.8
	no	109	85.2
	Total	128	100
Tour operators	yes	56	98.2
	no	1	1.8
	Total	57	100

Table 7-6: Ownership of broadband in the surveyed hotels and tour operators

In the case of hoteliers, the data (see Table 7-7 below) suggest that as the number of staff increases, so does the ownership of broadband. The adoption of hotels with staff numbers below 10, between 10 and 25, and between 26 amd 50 were 2.7%, 10.4%, and 18.2% respectively. The data also indicate two deviant cases, were two hotels with a staff number count of 51-75 had no broadband facilities in their businesses. These hotels had been in operation for many years, and the introduction of broadband was not considered to be important by the owners/managers.

			Do you have broadband in your business?		
			yes	no	I do not know
Number of staff in the establishment	below 10	Row N %	2.7%	97.3%	0.0%
		Count	1	36	0
	10-25	Row N %	10.4%	89.6%	0.0%
		Count	5	43	0
	26-50	Row N %	18.2%	81.8%	0.0%
		Count	6	27	0
	51-75	Row N %	0.0%	100.0%	0.0%
		Count	0	2	0
	76-100	Row N %	75.0%	25.0%	0.0%
		Count	3	1	0
	more than 100	Row N %	100.0%	0.0%	0.0%
		Count	4	0	0
	Do not know	Row N %	0.0%	0.0%	0.0%
		Count	0	0	0

Table 7-7 Broadband adoption versus staff numbers in the surveyed hotels

7.4.4 Website adoption by hoteliers and tour operators

Respondents were asked about the adoption of websites for their business. As shown in Table 7-8 below, 12.5% of the hoteliers have websites to promote and attract customers, while the majority, 87.5% have not adopted the technology. In the case of tour operators, the majority of the respondents, 93%, have adopted websites for their businesses.

		Frequency	%
Hoteliers	yes	16	12.5
	No	112	87.5
	Total	128	100
Tour operators	yes	53	93
	No	4	7
	Total	57	100

Table 7-8: Adoption of website by hoteliers and tour operators

Table 7-9 below shows that as the number of staff increases so does the website adoption rate of the hoteliers. For hoteliers with staff numbers below 10, none have adopted a website, whereas hotels with staff numbers between 10 and 25, 4.1% have adopted a website. In the case of hoteliers with staff numbers between 26 and 50, 15.2% have adopted a website, hotels with staff numbers between 76 and 100 and more than 100 the figures for website adoption were 66.7% and 75% respectively. However, three hotels with staff numbers between 51 and 75 stated that there was no need for the adoption of a website in their businesses.

Number of staff in the establishment *Do you have a website for your business?' cross-tabulation

			Do you have a website for your business?			
			yes	no	in the process	Total
Number of staff in the establishment	below 10	Count	0	35	0	35
		% within number of staff in the establishment	0.0%	100.0 %	0.0%	100.0%
	10-25	Count	2	47	0	49
		% within number of staff in the establishment	4.1%	95.9%	0.0%	100.0%
	26-50	Count	5	27	1	33
		% within number of staff in the establishment	15.2%	81.8%	3.0%	100.0%
	51-75	Count	0	3	0	3
		% within number of staff in the establishment	0.0%	100.0 %	0.0%	100.0%
	76-100	Count	2	1	0	3
		% within number of staff in the establishment	66.7%	33.3%	0.0%	100.0%
	more than 100	Count	3	1	0	4
		% within number of staff in the establishment	75.0%	25.0%	0.0%	100.0%
	Do not know	Count	1	0	0	1
		% within number of staff in the establishment	100.0%	0.0%	0.0%	100.0%
Total		Count	13	114	1	128
		% within number of staff in the establishment	10.2%	89.1%	0.8%	100.0%

Table 7-9 Website adoption versus staff numbers of surveyed hoteliers

7.4.5 Update frequency of hotel websites

The update frequency of hotel websites is shown below in Chart 7-19. The data indicate that the majority of websites, 38%, were not updated at all, 31% update their website every six months or more, 13% of the websites are updated every

week, and 13% every three months. The remaining 6% of respondents update their website every year.

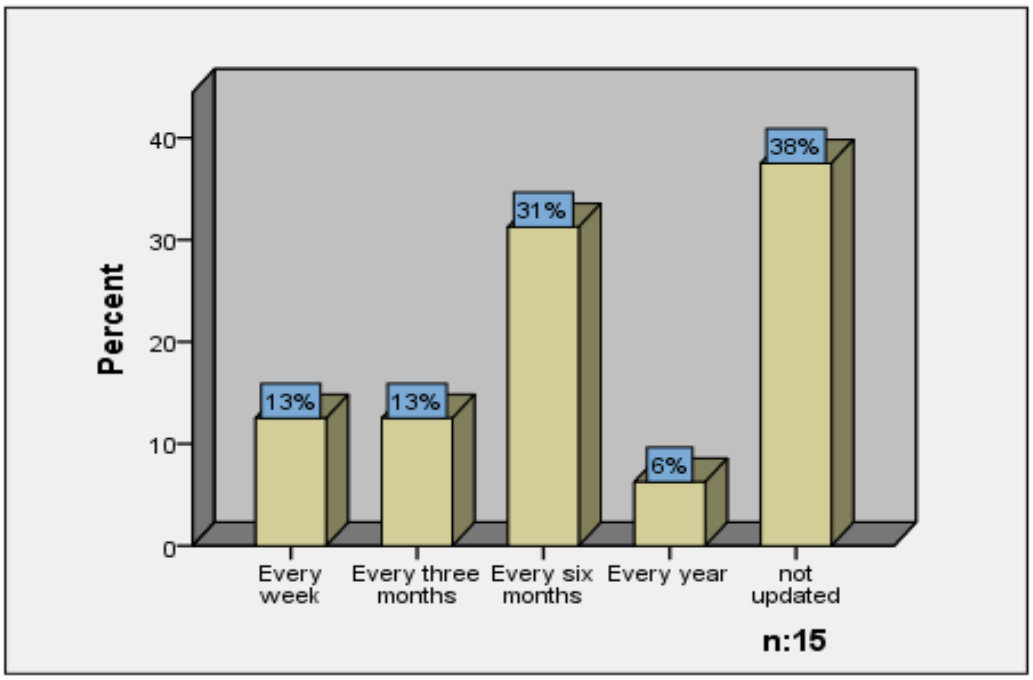

Chart 7-19: Distribution of hoteliers' website update frequency

7.4.6 Website update frequency by surveyed tour operators

The data presented in Chart 7-20 indicate that 35% of the respondents update their website every six months, followed by 18% updating every three months, 7% of the respondents update every day and also the same percentage update every week. Sixteen per cent update every month and the same percentage did not update their website.

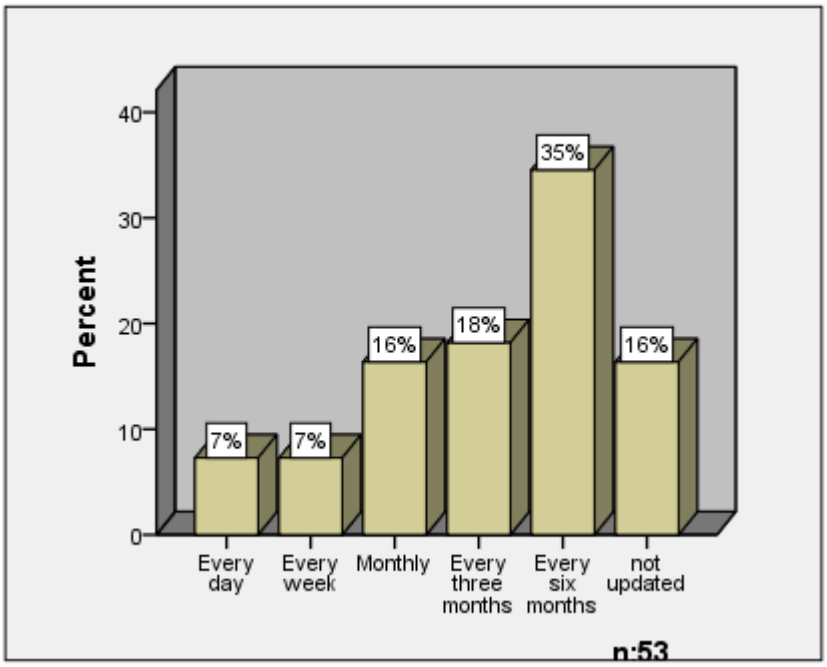

Chart 7-20: Distribution of tour operators' website update frequency

7.4.7 Adoption and use of e-mail by respondents

The data in Table 7-10 show that 32.8% of hoteliers have e-mail addresses, while 67.2% have not adopted this technology. In the case of surveyed tour operators, almost all, 98.2%, use e-mail in their businesses. The use of e-mail, as a fast, cheap and reliable means of communication, is prevalent in the developed world, while in developing countries access to this technology is still limited. The researcher's personal experience indicates that checking e-mail, whether there is a new message or not, costs money. In the case of the majority, users do not normally check their e-mail; they only check their e-mail after they are informed by the sender using another means of communication.

		Frequency	%
Hoteliers	yes	42	32.8
	no	86	67.2
	Total	128	100
Tour operators	yes	56	98.2
	no	1	1.8
	Total	57	100

Table 7-10: Adoption and use of e-mail by surveyed hoteliers and tour operators

7.5 Online reservations system on hotel websites

The use of websites for hotel businesses is important in many aspects of the business. It is used for marketing the business, at the same time it provides customers with the opportunity of booking a hotel and processes payments. The research participants were requested to indicate if there are facilities to book and pay for hotel rooms on their websites. The data, as shown in
Table 7-11, indicate that of the total of 128 participants, 12.5% of the respondents have websites and of those 18.8% have an on-line booking and payment facility on their website, and 81.3% have no payment facility.

		Frequency	%
Valid	yes	3	2.3
	no	13	10.2
	Total	16	12.5

Table 7-11: Percentage of hoteliers that have online booking and payment facilities on their websites

7.6 How are computers used in the hotel and tour operator business?

Research participants were asked to indicate how frequently computer based systems were used in their business. As indicated below in Table 7-12, computers

were used all the time and frequently by hoteliers for the following applications, 86.7% for accounting, 77.7% for spreadsheets, 62.2% for word processing, 31.1% for front office, 28.9% for databases, and 11.1% for others. In contrast, databases were never used by 71% of hotelier respondents, and 62.2% of these respondents never used front office software for their operations.

Software	All the time	Frequently	Sometimes	None	I do not know
Front office operations	20.0%	11.1%	6.7%	62.2%	0.0%
Accounting operations	35.6%	51.1%	6.7%	6.7%	0.0%
Word processing	11.1%	51.1%	8.9%	28.9%	0.0%
Spreadsheets	13.3%	64.4%	8.9%	13.3%	0.0%
Databases	6.7%	22.2%	0.0%	71.%	0.0%
Others	2.2%	8.9%	0.0%	88.9%	0.0%

Table 7-12: Frequency of use of computer operations by hoteliers

Similarly, tour operator research participants were asked how frequently various software was used in their business. The results, as shown below in Table 7-13, indicate that computers were used all the time or frequently for the following applications, 96.5% for word processing, 91.2% for spreadsheets, 80% for tour planning and management and 63.2% for staff records. In contrast, tour planning and management software was not used by 9.1% (nearly one in ten).

	All the time	Frequently	Sometimes	None	I do not know
Tour planning and management	67.3%	12.7%	7.3%	9.1%	3.6%
Staff records	38.6%	24.6%	21.1%	15.8%	0.0%
Word processing	66.7%	29.8%	1.8%	1.8%	0.0%
Spreadsheets	61.4%	29.8%	3.5%	5.3%	0.0%
Others	48.9%	17.8%	2.2%	31.1%	0.0%

Table 7-13: Frequency of use of computer operations by tour operators

The comparison of the use of computer based systems between tour operators and hoteliers indicates that tour operators use computers more frequently than hoteliers, for example, word processing was used 1.5 times and spreadsheets 1.2 times more by tour operators.

7.7 Respondents' perception of ICT impact on their business

The respondents were asked about the impact of ICT systems on the operation and performance of the hotels. The results are shown in

Table 7-14. The data indicate that accounting (71%) and spreadsheets (44%) have the highest impact on hoteliers business. In contrast, the Internet (69%), websites (64%), front office and management software (62%) and email (58%) have no impact on the business.

	very high	limited	none	do not know
Front office	22%	16%	62%	0%
E-mail	31%	11%	58%	0%
Internet	24%	7%	69%	0%
Website	16%	20%	64%	0%
Word processing	16%	51%	33%	0%
Spreadsheets	44%	42%	13%	0%
Accounting software	71%	24%	4%	0%
Management software	22%	16%	62%	0%
Purchasing software	16%	40%	44%	0%
Other systems	9%	4%	80%	7%

Table 7-14: Impact of ICT systems on hotel operations

Tour operator research participants were requested to indicate the impact of various ICT systems on their businesses. The data, as shown below in Table 7-15, indicate that e-mail (95%) and websites (82%) have a high impact on their business. Other software also has a significant level of impact, for example, tour planning and accounting (77%), word processing (70%) and spreadsheet (61%).

	Very high	Limited	none	do not know
Tour planning and management	77%	11%	6%	6%
E-mail	95%	5%	0%	0%
Website	82%	16%	2%	0%
Accounting and finance software	77%	18%	5%	0%
Word processing	70%	23%	7%	0%
Spreadsheets	61%	27%	13%	0%
Other systems	55%	2%	39%	5%

Table 7-15: Perceived impact of ICT systems on tour operators

The comparison between tour operators and hoteliers on the impact of software on their business indicates that there is a more significant impact on tour operators than hoteliers, for example, email has more than 3 times, and websites more than 5 times the impact on tour operators than hoteliers.

7.8 Which methods do customers use to book a room or a service in a hotel?

Research participants were requested to state how their customers make reservations. The data for hoteliers, as shown below in Table 7-16, indicate that the following reservations methods were used frequently or very frequently, 95 % are walk in customers, and 25% are telephone reservations. In contrast reservations were never conducted using the following methods, 94% hotel websites, 91% reservation through fax and 86% e-mail reservations.

	very frequently	frequently	sometimes	never
Walk in reservation	28%	67%	4%	1%
Telephone reservation	5%	20%	52%	23%
Fax reservation	1%	3%	5%	91%
E-mail reservation	3%	5%	6%	86%
Reservation through the hotel website	2%	2%	3%	94%
Reservation through travel agents	2%	3%	10%	85%

Table 7-16: Distribution of hoteliers' customers' booking using various methods

Tour operators are adopters of ICTs. The data in Table 7-17 below indicate that reservations were made very frequently or frequently using e-mail (91%) and through hotel websites (76%).

	very frequently	frequently	sometimes	never
Walk in reservation	18%	18%	47%	18%
telephone reservation	14%	26%	42%	18%
Fax reservation	7%	12%	40%	40%
E-mail reservation	70%	21%	5%	4%
website reservation	57%	19%	11%	13%
From travel agents reservation	18%	21%	30%	30%

Table 7-17: Customers' method of reservations in the tour operators business

7.9 What methods are used for information seeking in hotels and tour operators?

The study sought to establish which methods respondents use to seek information in their businesses; the results are presented below for hoteliers and tour operators. The data show that tour operators use the Internet very frequently (81%) while the majority of hoteliers (85%) never use the Internet. In the case of hoteliers the data indicate that 2%, 9%, and 5% of the respondents use the Internet very frequently, frequently and sometimes respectively, while in the case of tour operators 11% respondents use the Internet frequently while 9% never use the Internet to seek information. This clearly shows the difference in Internet use between hoteliers and tour operators.

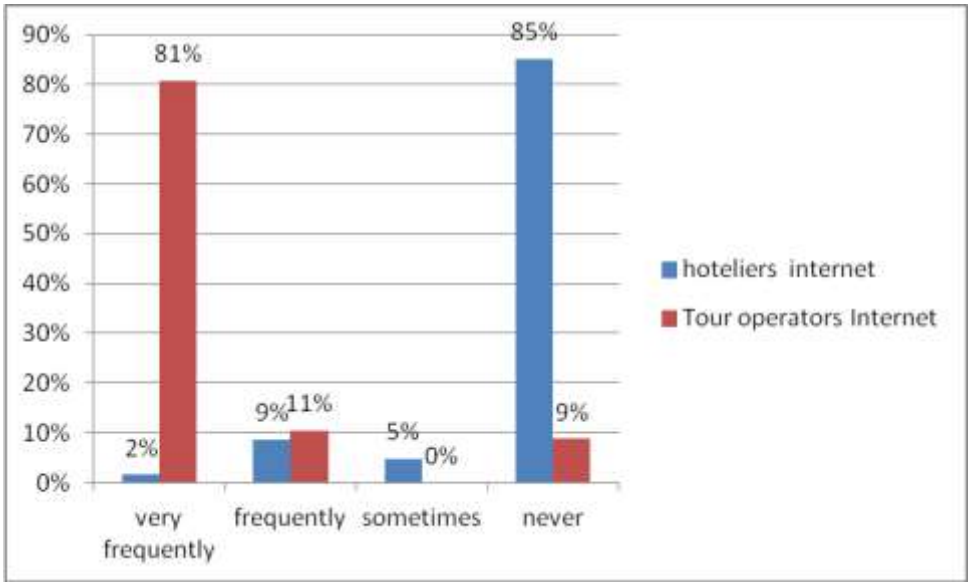

Chart 7-21: Distribution of Internet use to seek information by hoteliers and tour operators

7.10 Factors affecting adoption or rejection of ICTs

After establishing the level of adoption/non-adoption of ICTs, the next aspect of the study was to examine the major and minor factors that affect the adoption/rejection of these tools by both hotel and tour operator businesses. Finding these reasons or factors are central to the study. Respondents were

requested to state the major and minor reasons that influence their decision to adopt or reject ICT tools. The survey focuses on three ICT tools: computers, broadband and websites.

The data show that tour operators are adopters of ICT. The data collected on the major and minor reasons for adoption are presented below; these factors inform the decisions for the adoption or rejection of ICTs in these businesses. In the case of hoteliers, the majority are not adopters of ICT, as a result the data collected and presented focuses on the major and minor factors for non-adoption. The factors for the adoption of ICT by hoteliers are also presented.

7.10.1 Why adopt computers?

The adoption of computers for personal use or at work is common in developed countries, but this is not the case in developing countries. The interconnection of computers provides far more advantages for users. There are many advantages derived from the connection of computers as witnessed by the growth and development of the Internet. For example, sharing of data by users, access to information anytime from anywhere, collaborative work and buying and selling of products and services are some of the advantages.

Some hoteliers (35.2%) and all tour operators (100%) use computers in their businesses as shown in section 7.4.2 above. Respondents who had adopted computers in their business were requested to state the major and minor reasons for this. The major reasons for computer adoption are different for tour operators and hoteliers as shown below in Chart 7-22 and Chart 7-23.

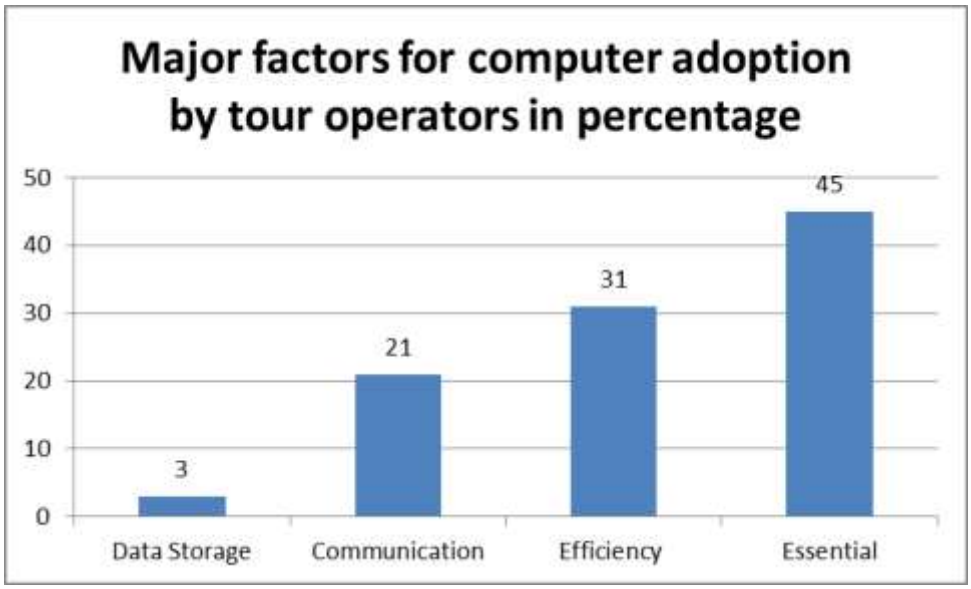

Chart 7-22: Major factors for the adoption of computers by tour operators in percentage

In the case of tour operators, four factors were identified as the major reasons for the adoption of computers, namely: it is essential (45%), it provides efficiency (31%), and it is used for communication (21%) and for data storage (3%). While in the case of hoteliers, five main factors were identified, namely: it provides efficiency (31%), it is used for finance (28%), for data storage (18%), to modernise (8%), customer demand (6%) and it is essential (4%).

One of the significant differences between tour operators' and hoteliers' major reasons for the adoption of computers was that it is essential for the work of tour operators, whereas it is not the case for hoteliers. Tour operators indicate that computers as a means of communication with their customers is a major factor, in contrast it was not a major factor for hoteliers. One tour operator respondent summarised this view as follows: "e-mail is the main means of communication for our work and a computer is necessary for this." Other tour operator respondents described the importance of communication for their work as follows: "It is a must have tool for communication." Tour operators communicate with their overseas

customers exchanging information on subjects such as tour plans, pricing, and timetabling of tours. This opinion was expressed by one tour operator respondent as follows: ”All our customers are foreigners, therefore a computer is the main means of communicating with them.” Customers use e-mail to communicate with tour operators. Hence tour operators need to use the same means of communication to attract their potential customers and the adoption of this means of communication was expressed by one of the tour operator respondents as follows: “it is the choice of our customers’ means of communication which we need to use.”

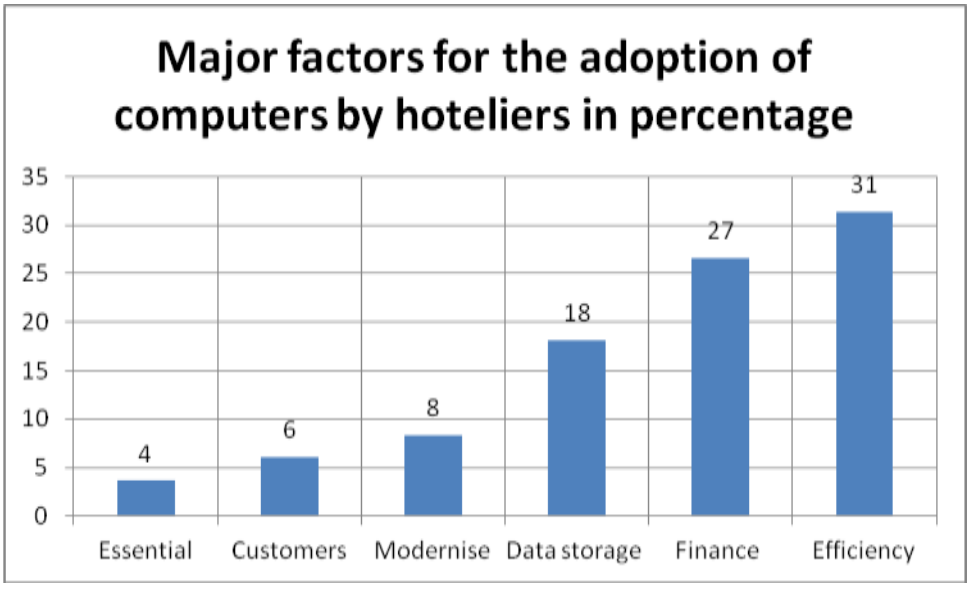

Chart 7-23: Major factors for the adoption of computers by hoteliers in percentage

The majority of tour operators (45%), but only 6% of hoteliers, indicate that computers are essential for their work. A significant number of tour operators described computers as an essential tool for their work, they stated that they would not be able to do without it. The following statement, expressed by one tour operator respondent, summarised this view: “We would not be able to work without

a computer." One hotelier respondent made a similar comment: "It is an essential tool for our work."

Efficiency as a factor for the adoption of computers

Many hotelier and tour operator respondents stated that efficiency was a factor for the adoption of computers in their businesses. The data show that 31% of hoteliers and 31% of tour operators stated efficiency as a factor for the adoption of computers as shown in Chart 7-22 and Chart 7-23 above. Many reasons were given for efficiency by respondents; for example, computers as a time saving tool, to simplify the work, and to provide reliable services. This was simply expressed by respondents as follows: "It brings efficiency" and "... to be able to work fast". One hotelier respondent expressed the same point as follows: "the computer facilitates and makes our work easy".

Accounting as a main factor for the adoption of computer

Just over a quarter of the hoteliers (27%) stated that managing finance using a computer was one of the main factors that persuaded them to adopt a computer. In contrast, tour operator respondents felt that accounting was not a major factor for adopting a computer, but it was a minor reason for the adoption.

Many respondents pointed out that managing their outgoing and incoming financial situation is very important. This view were expressed by nine respondents; one hotelier respondent stated: "we have installed our computer to know about our outgoing and incoming financial status". Another three respondents stated that computers were introduced for accounting purposes.

Data storage

Computers are used to store data and provide fast data retrieval and are used extensively in business; many hotelier respondents (18%) and some tour operators (6%) described data storage as a major factor for adopting computers in their businesses. Significant numbers of respondents highlighted the importance of

data storage and retrieval in their businesses, the following response from a respondent summed up this point: "...to save data and retrieve, it is also very easy to correct, amend or delete data".

At least six respondents mentioned the importance of data integrity as a main factor for the adoption of computers. It appeared that not only data storage but also accuracy are important in their businesses. This idea was expressed as follows by one respondent: "we use computers to have data integrity".

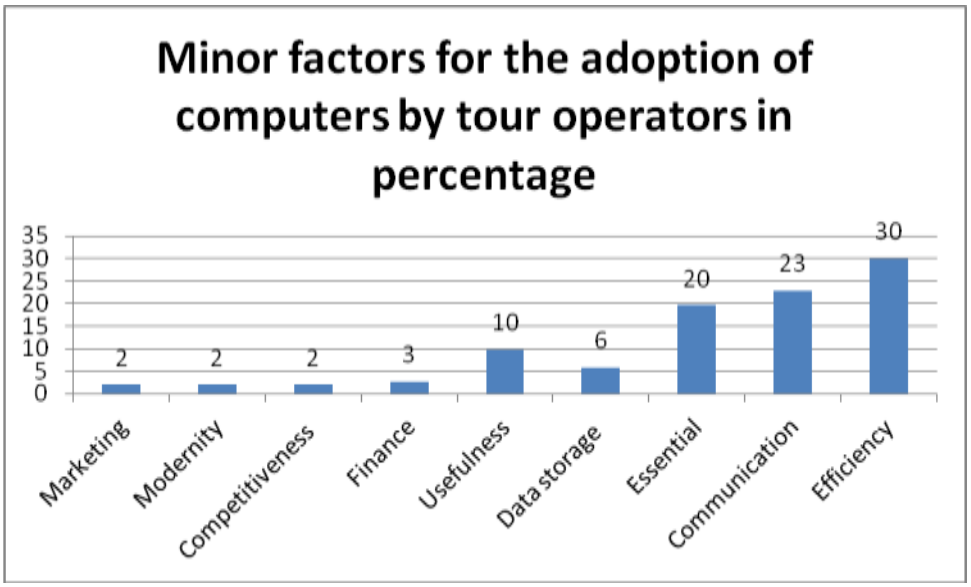

Chart 7-24 Perceived minor factors for the adoption of computers by tour operators

Minor factors for the adoption of computers by tour operators

Tour operator respondents were requested to give the major and minor reasons for the adoption of computers in their businesses. The major reasons are shown in Chart 7-22, namely: that it is essential, it brings about efficiency, it is the main tool for communication and data storage. The minor factors that influence the adoption of a computer for tour operators include: its usefulness, its use for finance and for providing competitive advantage, it brings modernity to the organisation. Other

respondents thought the use of computers for marketing contributed to the decision to adopt computers. It was also thought that computers provide competitive advantage.

Minor factors for the adoption of computers by hoteliers

The data as shown in Chart 7-25 indicate that there were eight minor factors stated by hoteliers as additional reasons for the adoption of computers. The first significant factor that was widely discussed was the contribution of customers as a factor for diffusion. Respondents that adopt ICTs stated that their main customers are foreigners. The also stated that the computer is essential for booking enquiries and all other communication; typical response include: ”our customers are foreigners”, “to satisfy our customer demand”. Other comments include: “to get new customers and raise the standard of our hotel”.

Respondents also discussed how computers are used to manage their hotel bookings and the service provision in the business. Comments include: “to monitor and manage our hotel staff and internal operations”. To a lesser degree, respondents pointed out convenience and competition as a factor; one respondent stated: “It is very convenient for the service we are providing.” Another respondent pointed out that computers were introduced in the business as a result of an increase in competition, and it was expressed as follows: ”Computers were introduced as a result of competition in the sector”.

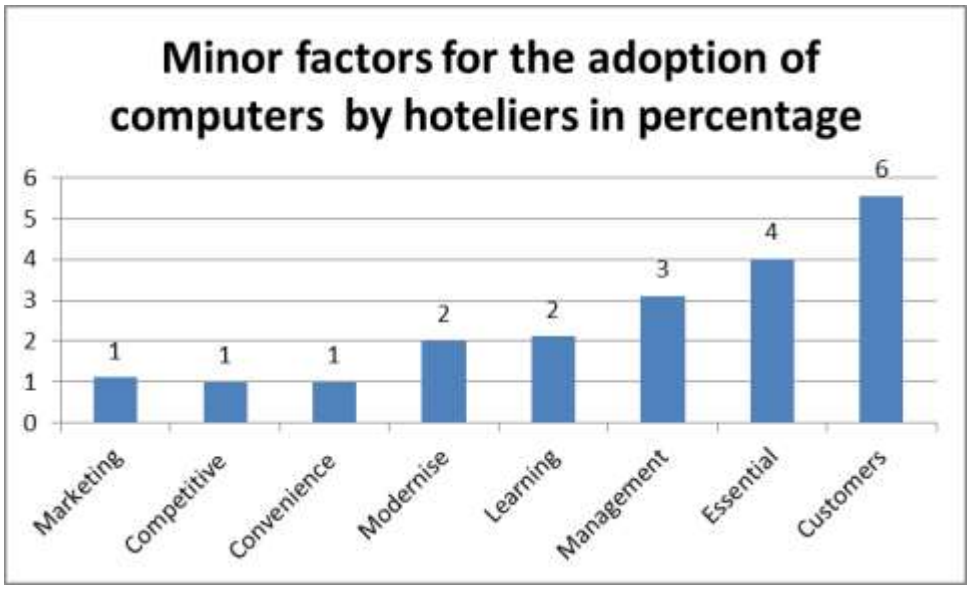

Chart 7-25: Minor factors for the adoption of computers by hoteliers

7.10.2 Barriers to the adoption of computers in the hotels

The data collected for non-adoption of computers focused on hoteliers, as all tour operators are adopters. Hoteliers provided various reasons for not adopting computers in their establishments. These reasons were categorised into themes, and these themes provide insights into the reasons why adoption is not taking place. There are seven themes that were derived from the data and are presented below.

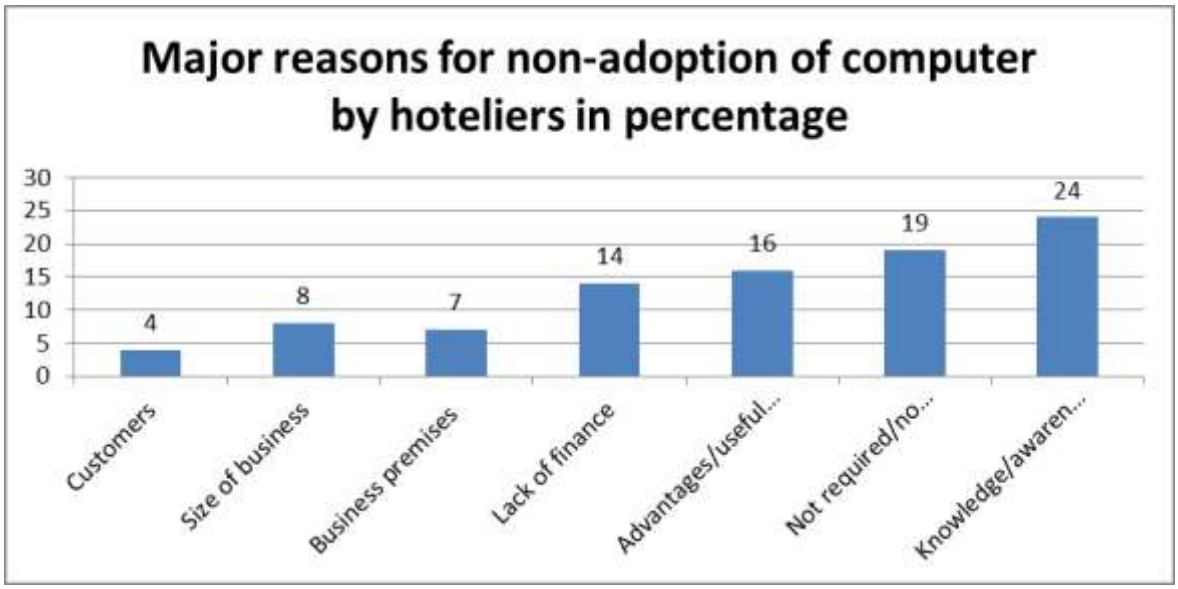

Chart 7-26 Barriers to the adoption of computers by hoteliers

Knowledge and awareness

One of the factors that affects the adoption of computers is the lack of knowledge. Rogers (2003) stated that knowledge is one of the five factors that affect diffusion; it is the first stage of the adoption process. Many respondents (24%) mentioned having a lack of knowledge about computers. Two respondents stated the lack of knowledge as follows: “I do not know about a computer”. While another stated “There is no one who knows about a computer”.

Furthermore, many respondents discussed the problem of identifying and using suitable software systems to help them in their establishments. In the words of one respondent: “our lack of awareness of the advantages of computers for our hotel is the main factor that determines our non-adoption of a computer”.

Not required/no demand

Many respondents (19%) stated that a computer is not required for their business. Many of the tasks and processes in the hotels are done using pen and paper. There are no sufficient convincing reasons for the hoteliers to use a computer in

their businesses. In the words of one respondent “there is nothing that requires the use of a computer in our hotel”. Having a computer in a hotel necessitates having clear requirements that the computer satisfies in the processes or tasks of a hotel.

Respondents repeatedly stated that there is no area in which a computer can be used in their hotels. Furthermore, computers require additional systems such as software and printers with applicable skills, which are not always available in a small hotel. The existing manual system is preferred to the computer, and as one respondent stated: “we think it is not helpful for what we do.”

Advantages/usefulness

The relative advantages or usefulness of an innovation is one factor that facilitates the adoption of innovation. In the case of hoteliers, adopting computers in their establishments was affected by a lack of clear advantages or usefulness in their day-to-day operations of the hotels. Some respondents (16%) echo these problems of finding advantages or usefulness, particularly with relation to the level of investment required. Three respondents stated this as follows: “We were unable to find the advantages of a computer for what we do”. Some other respondents stated they did not know the advantages beforehand but they were now intending to introduce computers in their hotels. One of the respondents stated this change in understanding the advantages of a computer for his hotel: “In previous cases we were not aware of the advantages of a computer but now we are planning to use computers in the future”.

At least three respondents discussed the problem of identifying the advantages of a computer for what they do in their hotel, particularly in identifying clear advantages with respect to the operation of small hotels. Many tasks are done using manual systems, and there is a distinct view that what is done is done sufficiently well, and there is no incentive to explore other available methods. This opinion was illustrated by one respondent as follows: “we are not able to understand the advantages of a computer for the business”.

Lack of finance

The difficulties experienced by SMBEs in raising finance for improvement and investment are well documented, and it is even more difficult in developing countries. Some respondents (14%) indicate that lack of finance is a major factor for non-adoption of a computer in their establishments. One respondent described the situation with the lack of finance as follows: “we are limited by the lack of finance, on what we do, we struggle to pay our rent”. Another respondent stated: “there is always a lack of finance”. Another made the same point: “this is a very small hotel and lacks financial strength”.

The price of a computer is not cheap, this is as a result of many factors including 40% import tax and an inflation level of 24% (2012) which make a PC unaffordable particularly for small hotels. Many respondents reiterated the lack of affordability of a computer, as one respondent pointed out: “we do not have the ability to finance the purchase of a computer”.

Other respondents mentioned the additional expense associated with the ownership of a computer. Hotels are required to employ new staff that have the skills and knowledge to use a computer, or provide training for existing staff. This is an additional expense for a small hotel. These views are summed up by the following comments: “... buying a computer requires hiring of other staff with skills and knowledge to use it, and we do not have the finance to do this”, “we do not have the financial capability of employing a computer operator in our hotel”, “there is no budget to employ staff to operate a computer”.

In addition, a computer requires regular maintenance and updating from time to time to keep it in a working order and to protect the data from viruses and unwanted programs. This is an additional expense for hoteliers. Although hoteliers use computers, when they malfunction it may not be possible to maintain them because of lack of money. One respondent explained the problem as

follows: “we bought a computer and we were using it for a while but now it is faulty and we are unable to fix it”.

Businesses premises

Some respondents (7%) stated that renting business premises is a barrier to adoption. Many respondents are tenants of the AARH. The AARH owns many business and residential premises in the city. The previous military government passed a proclamation (Proclamation No. 47/1975) that nationalised all urban land and extra houses (except houses occupied by owners of the property and one other house used for business by the family). It denied any compensation for the urban land or houses it nationalised; furthermore, the government replaced the property owners and collects rent from the tenants. The administration of small houses was given to the Kebeles (sub-district administration) and the Ministry of Housing administered more affluent houses and big businesses. The Ministry of Housing (MH) has now been changed to the AARH by the incumbent government.

Many respondents discussed the difficulties faced as a result of the lack of protection of rights by law for tenants. Tenants are not allowed to change any structure or install anything in the property. One of the respondents explained the situation as follows: “The property is administered by AARH and we are not even allowed to install sockets in the premises”. Another interviewee referred to the same factor, stating that improvement of business premises is difficult when renting from the AARH. In the words of another interviewee: “The property is owned by the AARH and it is difficult to install anything”. Tenants can be evicted with two weeks’ notice by AARH. There is no fixed period of tenancy, hence this situation creates uncertainty for hoteliers to adopt ICT. In the words of one interviewee: “I rent the property from AARH and I do not have a guarantee of how long I will be allowed to rent for or I can be evicted in two weeks”.

Size of business

Many respondents thought the size of the hotel was a factor for not introducing a computer into the business. One respondent pointed out that all the work they do is done manually, it is sufficient for what they require: “we have a small business and we use pen and paper”. Another interviewee discussed the limited service and products they offer for their customers. These limitations do not warrant investment in computers. In the words of the interviewee: “the service and products we offer are very limited and for these reasons we do not think a computer is necessary”. Other respondents stated that the business is very small “...because it is a small hotel we do not think we require a computer”. Typical responses include “it is very small hotel”.

Customers

Customers play a critical role in the continuity and expansion of businesses. Services and products are offered to satisfy the demand of customers. Two respondents pointed out that the low number of customers was not conducive to introducing a computer into their businesses: “low number of customers”. Other respondents stated that their customers do not use computers. A typical example is: “our customers are not users of computers and hence we do not need to use computers in our business.”

7.10.3 Why adopt wired-broadband in the business?

The adoption of broadband was covered in section 7.4.3; it indicated that 14.5% of hoteliers and 98.2% of tour operators have adopted broadband in their business premises. Respondents were requested to indicate the major and minor reasons that affect their decision to adopt broadband Internet.

The major reasons given by tour operator respondents are given below in Chart 7-27; the data indicate five reasons namely:

- It is used for communication (55%),
- It is an essential tool (29%),
- It is a tool to get information (7%),
- It is a marketing tool (5%), and
- It is useful for the business (4%).

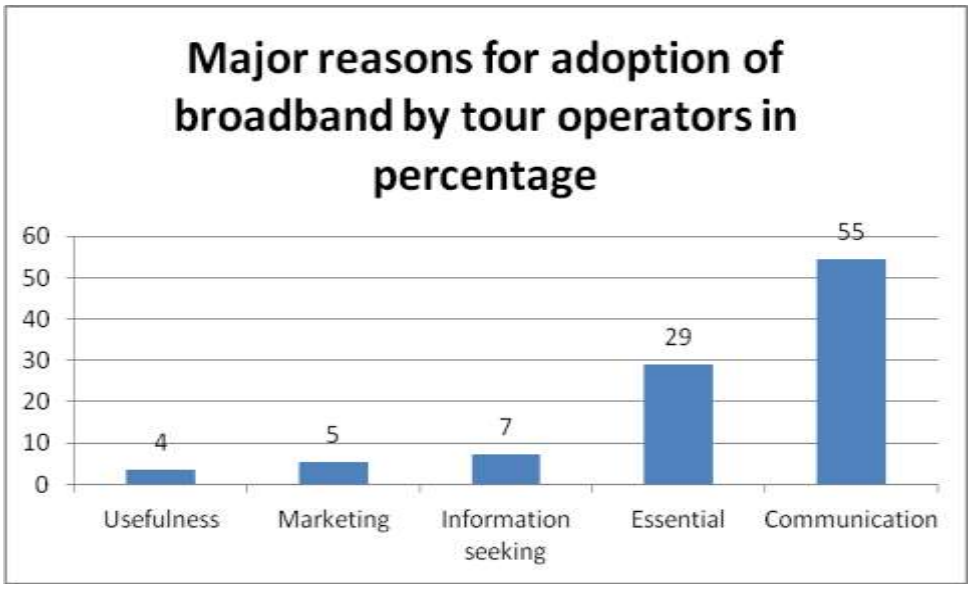

Chart 7-27: Major reasons for the adoption of broadband by tour operators in percentage

Communication

The significance of using broadband for communication by tour operators was widely discussed. First, it was stated by many respondents that their customers reside in other countries; for example “Our main business is with customers residing in the USA”. Similarly, another respondent stated “we have the Internet to communicate with our foreign customers”. This respondent summarised this point: “the characteristics of our work require us to engage with customers in many countries, this is the only way to be able to provide information and communicate with them”.

Many other reasons were given for the importance of communication for tour operators; one respondent pointed out that the Internet provided fast communication and it is a cheap method of communication. Many respondents made these points, for example: ”it is a cheap and easy way of communicating with the outside world”. Two respondents stated that Internet communication is used socially and professionally. For example, to communicate with other organisations, this point was summarised by one respondent as follows:” it is a means of communicating socially and with government organisations”.

Essential/usefulness

Many respondents discussed the importance of broadband for tour operator businesses; a typical response from respondents included: ”All our work is processed using the Internet.” Other respondents stated that it is not possible to function without broadband. A prevalent theme was that tour operators have to have the Internet to function and communicate with their customers and manage their bookings. It appeared to be a significant tool for tour operators as expressed in the following two responses: “Tour operator businesses would not be able to function without the Internet”, “We need the Internet because our work is with customers who reside in foreign countries”.

Two respondents pointed out the usefulness of having the Internet enabled them to provide other services. For example, tour operators provide airline ticketing services alongside tour operation services. This was expressed by one respondent as follows: “We use the Internet for selling airline tickets”.

Information seeking

At least four respondents mentioned the role of the Internet as a major means of finding current information. The significance of the Internet as a means of finding information about anything was expressed as follows: “it is a means to get information about anything and everything in the world”. Another respondent

stated the importance of the Internet for finding information as follows: “to be able to find information on the net”.

Marketing

Three respondents discussed how the Internet provided a platform for marketing their tour operator businesses. It also enabled them to reach new customers as expressed here by one respondent: ”The Internet introduced our organisation to the world and also to new potential customers”. Respondents also discussed how the Internet was used to upload information on tourist attractions onto their websites: “We were able to load all the tourist attractions available for tourists onto our website”.

7.10.4 Hoteliers’ major reasons for adopting broadband in their hotels

The number of hoteliers that have adopted broadband Internet was given in section 7.4.3; it showed that limited numbers of hoteliers (19%) have adopted this technology. The respondents indicated that there were five major reasons for the adoption of broadband Internet as shown below in Chart 7-28. Customers are the main factor (68%), followed by information seeking (14%), modernity (14%), communication and finance (5% each).

Customers

Several respondents indicated that the majority of their customers are foreigners; these customers had access to the Internet in their native countries, all their social and professional communication is conducted through the Internet. Four respondents pointed out that Internet Wi-Fi is available for their customers, the following reason was given: “To satisfy customers’ requirements.” Another respondent expressed this view as follows: “Our customers are mainly foreigners, and our Internet service enabled them to communicate socially and professionally”. Another respondent gave a similar reason: “To attract customers, as many of our customers are foreigners”.

Furthermore, the Wi-Fi service is provided as a value added service without any additional fee for the customer. This free service is intended to attract new customers. This point was expressed by one respondent as follows: ”We provide free Wi-Fi to our customers”. Not all respondents provided free Wi-Fi; one respondent stated that a third party supplies the Wi-Fi, and customers are charged for the service. While another respondent said that Wi-Fi is a source of additional income for the hotel: “It serves as a source of revenue and it also increases the standard of the hotel”.

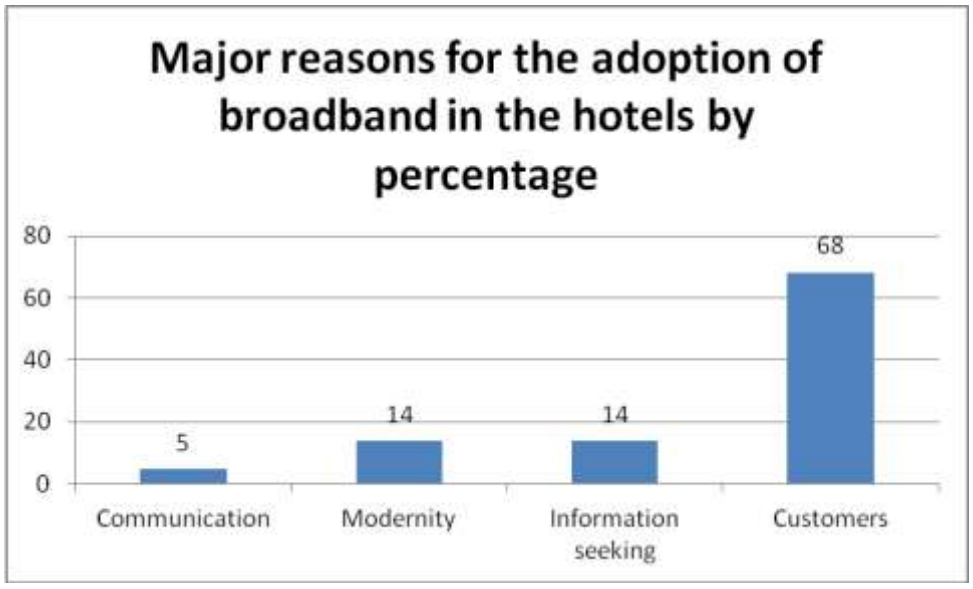

Chart 7-28: Major reasons for the adoption of broadband by hoteliers in percentage

Information seeking

Respondents expressed two main reasons; the first is to acquire information, the second is to educate themselves. One respondent summarised these two points as follows: “We use the Internet to learn and we also get information from the Internet.”

Modernity

A few respondents discussed modernity as a reason for the installation of the Internet in their hotels. The reasons given included to raise the standard of the hotel whereby it is possible to attract foreign customers. One respondent stated: “To modernise our hotel and attract foreign customers”.

Communication

Respondents discussed the importance of the Internet for communication, almost all hotel booking requests are received via e-mail. Respondents stated communication as one of the reasons for the introduction of the Internet in their hotels as expressed by one respondent: “we use it to communicate with anyone and anywhere in the world”.

7.10.5 Minor reasons for the adoption of broadband Internet by tour operators

Respondents were asked to indicate one major and at least three other minor reasons for the adoption of the Internet in their businesses. These minor reasons were organised in themes as shown below in Chart 7-29.

Many respondents mentioned the usefulness of the Internet as a minor factor for adoption; one frequently stated reason is to communicate with their major customers. Almost all tour operators’ customers are foreigners, and information exchange about tours, pricing and organisation needs to be fast and accurate. Many respondents repeatedly stated that the Internet is the only means of communication with their customers. Others considered the Internet to be an essential ICT tool; it is not possible to operate without it. One respondent summarised this point as follows: ”Tour operator businesses would not be able to function without the Internet” .

Several respondents stated the usefulness of the Internet for their businesses; for example, one respondent expressed how the Internet can be used for education, and used it to learn or research as follows: ”The Internet is a tool for work, research, and education”. It appears that all these activities, work, research, and education, require the finding of appropriate information. Four respondents expressed the importance of the Internet for learning as follows:” To learn from the resources available on the Internet”. One respondent said that the Internet was installed to get competitive advantage.

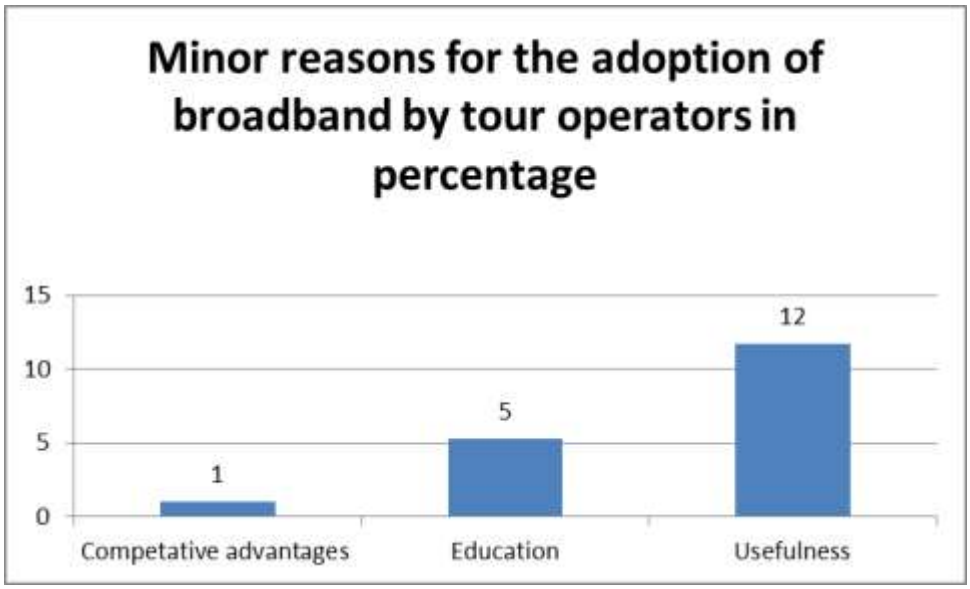

Chart 7-29: Minor reasons for the adoption of broadband by tour operators in percentage

Minor reasons for the adoption of broadband by hoteliers

Hotelier respondents were asked to indicate the minor reasons for the adoption of the Internet in their hotels. The minor reasons were categorised based on the contents, similar ideas formed themes, these themes are given below in Chart 7-30.

It can be seen from the data that there were two emerging themes, competitive advantage, and use of accounting software to control finance. Three respondents stated that the adoption and the use of the Internet in their hotels enabled them to have competitive advantages compared to other hotels with no Internet.

The data indicated that most of the hotels' customers are foreigners, it appeared that these customers preferred hotels with Internet rather than without. It appeared that having the Internet in a hotel establishment provides competitive advantage.

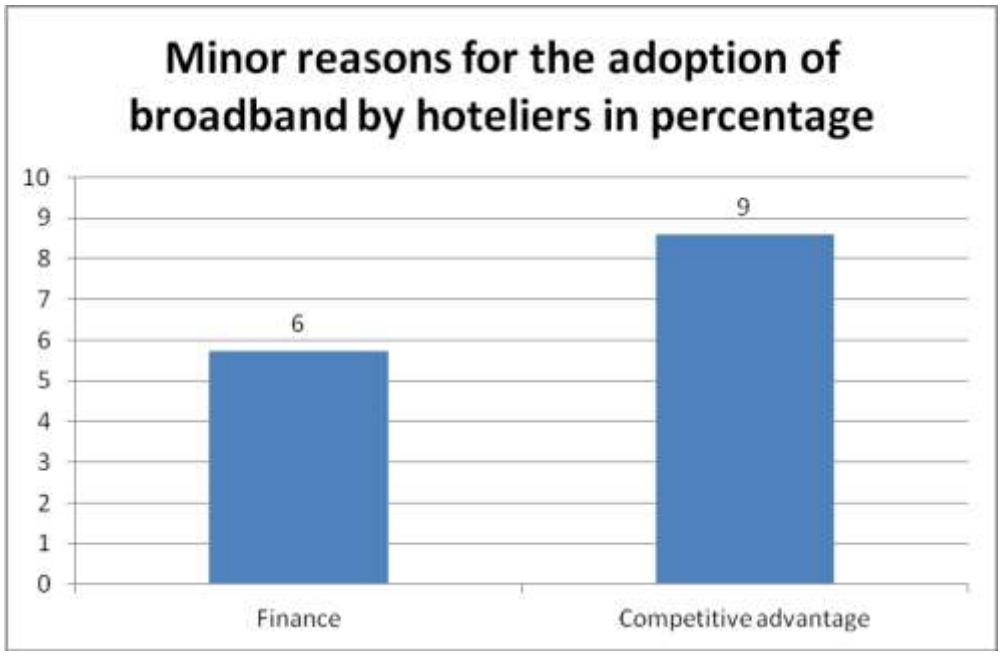

Chart 7-30: Minor reasons for the adoption of broadband by hoteliers

7.10.6 Reasons for non-adoption of broadband in the business

The non-adoption of broadband by hoteliers and tour operators varies significantly as shown in

Table 7-6. Most tour operators (98%) have adopted broadband in their businesses whereas only 14% of hoteliers have done so in their hotels. The non-adoption of broadband is shown below in Chart 7-31.

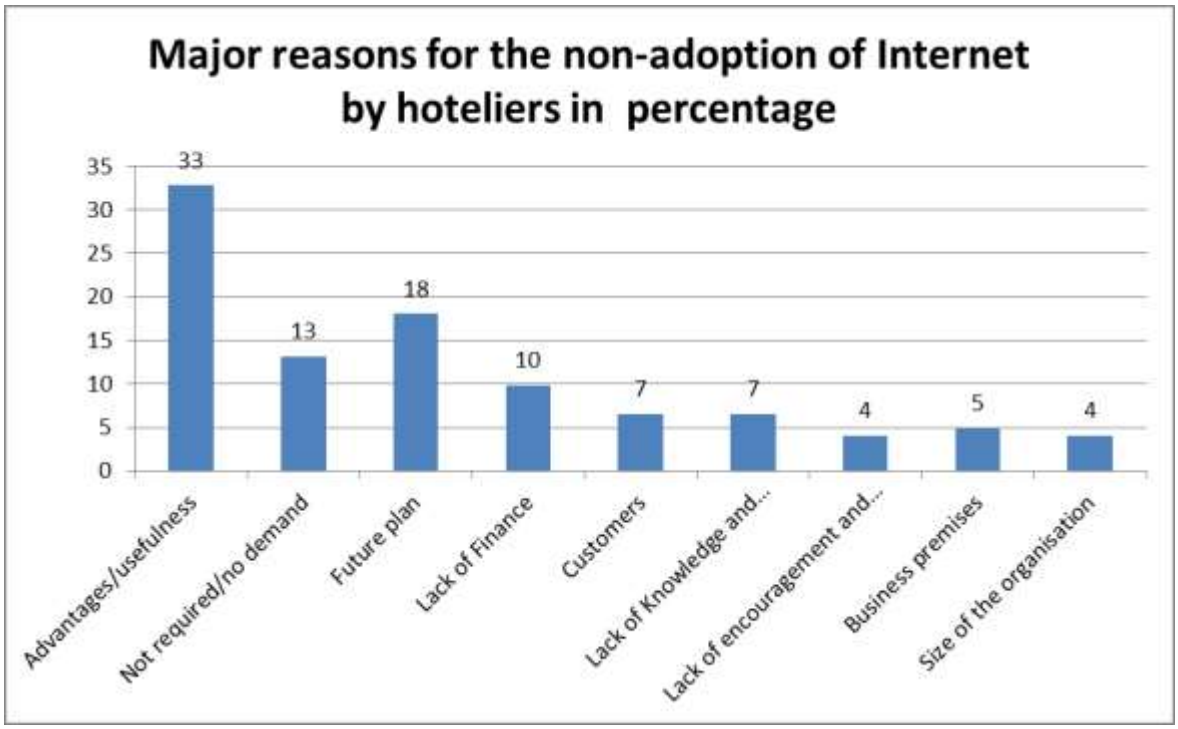

Chart 7-31 Non-adoption reasons that affect the adoption of the Internet by hoteliers

Lack of advantages/usefulness

Lack of advantages and usefulness were pointed out as significant reasons for the non-adoption of broadband. Nearly one third of the respondents, (33%), mentioned broadband as not having any advantages or usefulness in their business.

When respondents were asked to name one reason for not adopting broadband in their hotel, the prevalent theme was the lack of usefulness or advantage of broadband for small hotels. Typical responses included “We do not understand its advantages”, “We do not understand the usefulness of broadband for our hotel”. Similar reasons were given by manager respondents, stating that owners of hotels lack understanding of the use of the Internet.

Plan to adopt

Several respondents (18%) expressed their plan to install broadband in their businesses. The plan to install broadband is a recognition of the fact that the Internet can help the business in some way. At least six respondents stated their intention as follows: “There is an intention to install the Internet”. It is not a firm plan as such but it shows that there is an intention – unless there are other issues that stop this intention, there is a purpose to install the Internet. Other respondents expressed a firm intention to install the Internet in the near future; one respondent summed it up as follows: “We will install the Internet in the near future”. These groups of respondents had been persuaded and had decided to adopt broadband.

Requirement/need/demand

When asked, what is the main reason for the non-adoption of broadband in the hotel business, several respondents (13%) indicated that there is no requirement for their businesses. Various reasons were given for this, such as size of the hotel, there is no advantage or it is not essential.

Several respondents pointed out that broadband is not required in their businesses. Six respondents expressed this as follows: “We think we do not require broadband for what we do”. They think that there is nothing broadband can bring to the business. This was expressed by other respondents as follows: “We think that broadband is not useful or essential for our small business”. Other respondents expressed similar views: “we do not use broadband”. While others stated the size of the hotel as a main reason for not adopting broadband: “our business is very small so it does not require broadband”, “It is a small hotel and broadband is not required”.

Finance/price/affordability

Affordability of the Internet for small businesses was given as the main factor that affected the diffusion of the Internet. Several respondents cited that the

advantages of the Internet had been identified but that adoption was restricted because of its affordability for small businesses. One respondent summarised this as follows: “We know the advantage of the Internet, but it is very expensive, we cannot afford it”. Similar views were expressed that focused on the size of the businesses with limited financial ability. Small hotels generally have limited disposable profit that can be reinvested in the business. This view was expressed by one respondent as follows: “Small hotels have limited financial strength, and the lack of finance restricts their ability to install the Internet”.

Internet adoption requires many things for customers to use the services, such as computers, skilled work force, switches, and wireless hubs. Although many of these are covered by the initial investment, the skilled work force and the regular broadband monthly fee for the telecommunications supplier are on-going costs. Several respondents raised the issue of staff costs and one respondent summarised this as follows: “We do not have the finance to employ staff to operate the computer and other things in the hotel”. Many respondents mentioned the lack of finance and other resources; one respondent stated: “There are no resources to install and use the Internet in the hotel”.

Customers

Customers play a vital role in the adoption of innovation; their influence has been extensively documented. Three respondents stated that their customers are not users of the Internet as the reason for them not installing broadband in their hotels. These are small hotels with low standards, customers that use these facilities are not users of the Internet. One of the respondents pointed out: ”We are not encouraged to have the Internet in the hotel, because the hotel is small and we do not think there will be customers who use the Internet in our hotel”. Similarly another respondent stated: “We think that our customers are not users of the Internet, so it is not required.”

The Internet can be an income generator for some hotels, by providing Internet cafes on their premises. However, respondents stated that in small hotels customers are not users of the Internet, as a result hoteliers are not encouraged to install the Internet in their hotels.

Knowledge/awareness

A few respondents (7%) cited knowledge and awareness as factors that hinder the diffusion of the Internet in their hotels. The significance of the lack of knowledge about the Internet was mentioned: “We do not know about the advantages of the Internet”. Furthermore, it was stated that the lack of awareness of the advantages acts as barrier. Lack of awareness of what broadband can bring in terms of attracting customers and generating more income acts as a resistance factor to adoption. One respondent summarised this idea as follows: “We do not understand the advantages of the Internet”.

Lack of legal protection

Hoteliers that rent their business premises from the AARH discussed the difficulties faced in many areas, from renovating to installing sockets. One respondent summarised this as follows: “We are renting the premises from the AARH; we are unable to update or modernise the hotel because of restrictions. We are not allowed to install mobile chargers in each room, also we were not allowed to build en-suite shower rooms in the hotel, if we change the shape slightly, we will be notified to evacuate the premises in 15 days.”

Other respondents stated that there is no certainty on how long tenants can rent the property for. This did not give hotel owners the confidence to invest in new technology or improve the premises. One respondent expressed this point as follows: “we are not been able to modernise the hotel because we rent the premises from the AARH, any day we can be told to leave the premises”.

The impact of the rules is not clear, nor are the rights and responsibilities of the tenants (the hoteliers); what they can improve on the premises or what they are not allowed to do varies greatly, and this has undermined confidence. This has resulted in minimum investment in the hotels. It appears that this has impacted on the adoption of broadband, as it requires the installation of cables throughout the premises. This point was summarised by one respondent as follows: “we rent the premise from the AARH and the rules have impacted negatively on investment in technology.”

Size of the hotel

At least four respondents raised the small size of the hotel as a factor for the non-adoption of the Internet. In addition to the small size of the hotels, respondents stated that there is nothing useful that can be done using the Internet. While other respondents mentioned that there is no requirement for the Internet in the hotel. Two respondents stated: “The Internet cannot be used for anything in our small hotel”. Other respondents similarly expressed the view that the Internet is not required in small hotels: “The hotel is too small to require the use of then Internet for any of its operations”.

7.10.7 Why adopt a website in the business?

Tour operator respondents were requested to provide one main reason for the adoption of a website in their business. The collected data were grouped into categories and the emerging themes are given below in Chart 7-32. Many respondents (60%) indicated that their main reason for the adoption of a website was to use it as a marketing tool for their business.

Many respondents stated that their website was intended as a means of introducing their services to potential customers. One respondent expressed this as: “The website is used to introduce our product and services to the world”.

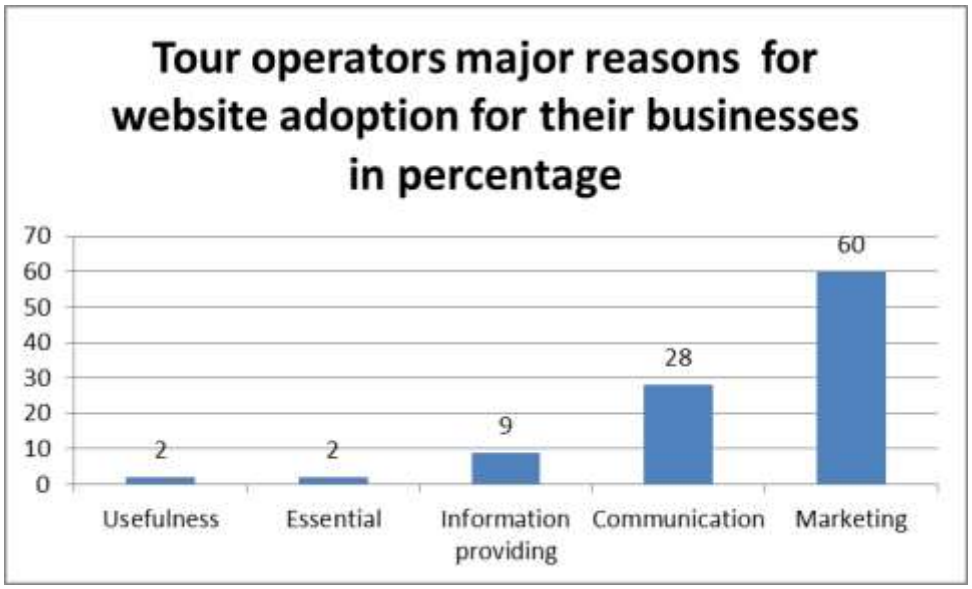

Chart 7-32: Tour operators' major reasons for website adoption in percentages

Many respondents pointed out that their website is the main method used to attract new customers. In the words of one respondent: "our website is the main means of getting customers". Other respondents emphasised that their website is used to reach their global customers.

Communication

Over a quarter of respondents (28%) stated the importance of websites for communicating with their customers as a factor for the adoption of websites for their businesses. The significance of the adoption of websites in tour operator businesses arises from the ability of a website to give the tour operator a presence to attract potential customers world-wide. It also provides information about what a tourist expects to see, tourist attractions, these are supported with pictures, video and text; it also provides the contact address of the tour operator. In many cases, the website is the only way a tourist can get the e-mail or any other contact address; one respondent expressed this as follows: "the website is the main address where we can be reached".

Many respondents discussed how their website provides them with a platform to be able to communicate with their potential customers. One respondent pointed this out as follows: “It creates a platform to connect with our customers”.
Many respondents referred to the ability of their websites to be the main gateway for connecting with their potential customers: “our website is used to communicate with potential customers around the world”. Other respondents said that, customers get the e-mail address of the tour operator and initiate communication, for example: ”Through our website potential customers send us an e-mail to enquire about our services”.

Information providing

The role of a website as an information providing platform for tour operators was discussed by some respondents; the information focused on the tour operator organisation and the service provided for tourists. As one respondent explained, information is normally provided mainly in English but some tour operators provide it in at least two or three languages. It appeared that by providing the relevant information it is possible to attract many customers, as pointed out here: “we are able to attract customers because we have all the information on our website”.

Essential/usefulness

All the above aspects provide some level of usefulness from various angles; such as from marketing the products and services to providing a communication platform, hence all this attracts more customers to their businesses. One respondent stated that the website is an essential tool for tour operator businesses as follows: “we would not be able to work without our website”. Another respondent pointed out the usefulness of the website to facilitate all aspects of the tour operation: “The website is useful in facilitating what we do”.

7.10.8 Tour operators' minor reasons for the adoption of a website

The minor reasons for the adoption of a website by tour operators are given below in Chart 7-33.

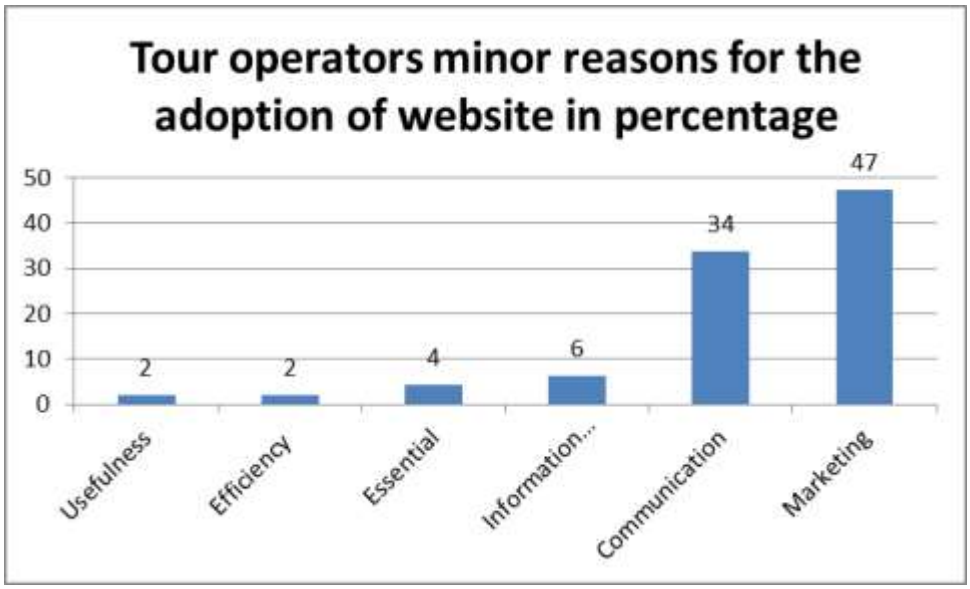

Chart 7-33: Tour operators' major and minor reasons for the adoption of a website

At least two respondents indicated simplicity as a minor reason for the adoption of a website in their business. One respondent pointed this out as follows: "It is an easy way of providing services".

What some respondents identified as a major reason other respondents considered to be a minor reason. This difference can be seen in Chart 7-32 and Chart 7-33. Many respondents indicated communication, information providing, and essential as minor reasons for adoption.

7.10.9 Major reasons for the adoption of a website by hoteliers

The data in section 7.4.4 indicated that 12.5% of hoteliers have adopted a website for their business. Respondents were requested to state the major reason that convinced them to adopt a website in their business. The chart (Chart 7-34) below indicates that 63% were for marketing their hotel, followed by providing information (9%), planning to adopt (9%), and to satisfy customer demand (9%).

Marketing

Respondents cited that the main reason for the adoption of a website was to market their hotel to their foreign customers, and this was expressed as follows: “To advertise our service to our customers (foreign customers)”. The significance of presenting the products and services of their hotels to their potential customers as the main reason for adoption was pointed out by many respondents and was expressed as follows: “to be able to present what we have to our potential customers”.

Information providing/plan/customers

Some respondents mentioned provision of information as the main reason for the adoption of a website. The main emphasis was given to the information provided about their hotel on their website. One respondent expressed this as follows: “to provide information about our hotel”. Respondents also indicated that they were planning to adopt a website in their hotel; one of the hoteliers had completed the preparation of their website and stated: “We are in the process of launching our website”.

At least two respondents said that their website focused on attracting more customers by reaching as many potential customers as possible. This point was highlighted as follows: ”...to be able to reach as many customers as possible by advertising our products and services.”

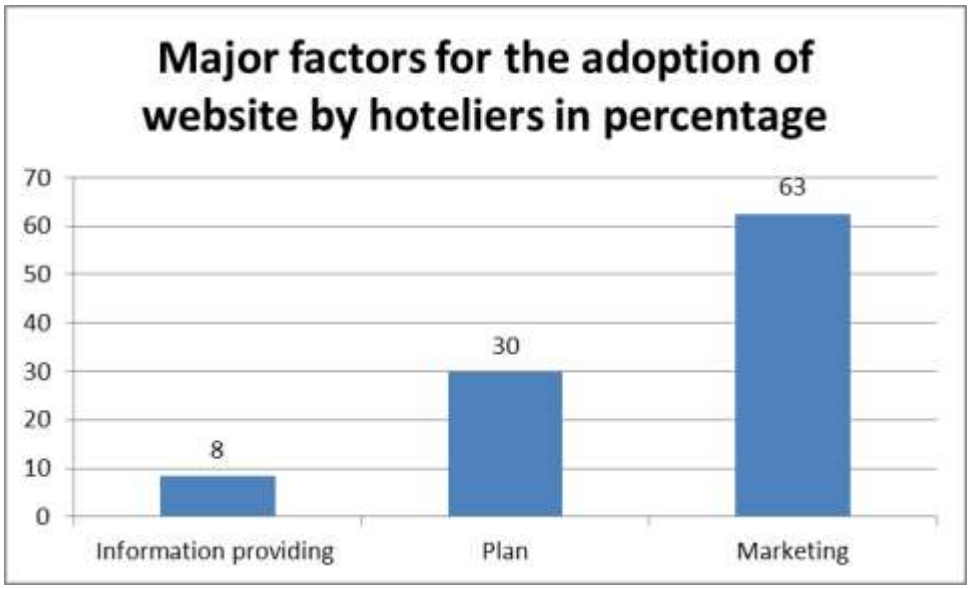

Chart 7-34: Major reasons for the adoption of website by hoteliers in percentage

7.10.10 What are the reasons for not adopting websites in businesses?

The role played by website technology in small and medium enterprises in developing countries, with the aim of increasing their customer base and sales, and used as a marketing tool, has been extensively documented. The adoption of website technology by hotel and tour operators varies depending on their customer base and their ability to finance the initial and on-going costs. Almost all tour operators have websites while a small proportion of hoteliers have adopted the technology, but a significant number of hoteliers have not adopted the technology. The data collected from hoteliers was organised into groups and is presented below in Chart 7-35; it provides insights into why the majority of hoteliers choose not to adopt the technology.

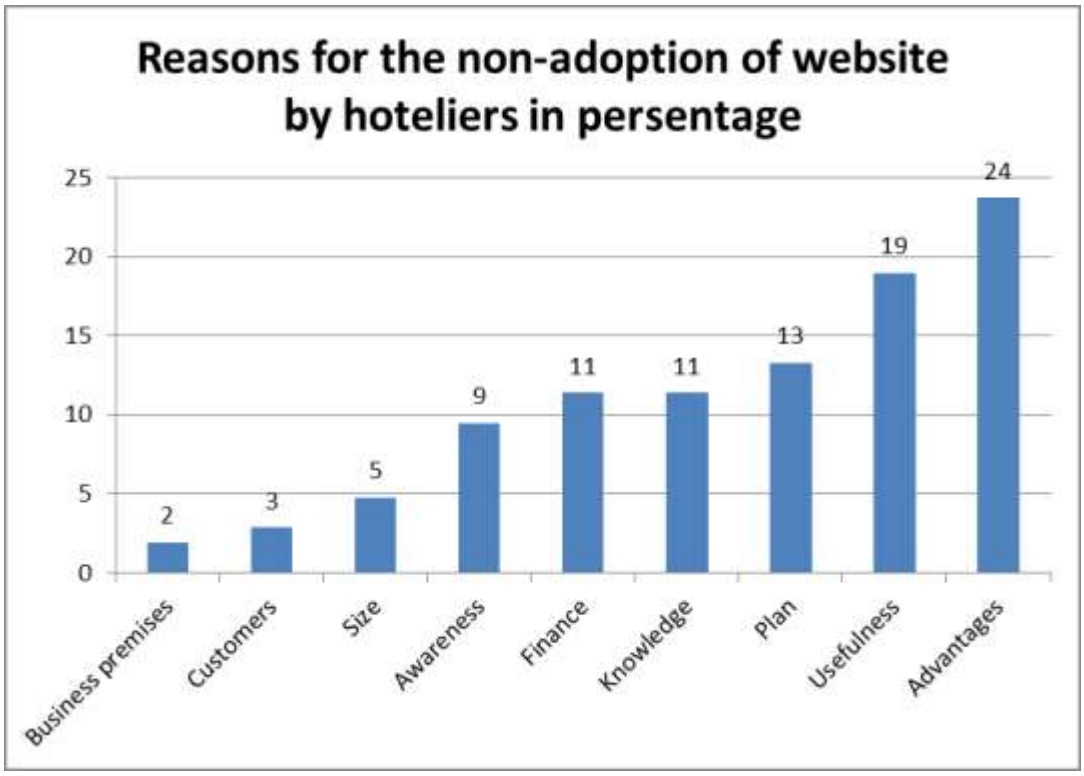

Chart 7-35 Reasons for the non-adoption of website by hoteliers in percentage

Advantages/awareness

When asked what was the main factor for non-adoption, 24% of the respondents, stated the lack of understanding of the advantages of websites for their businesses as a major factor for non-adoption. About 9% stated there was no awareness about website use in general. The prevalent theme was expressed by the following respondents: “There is a lack of awareness of the advantages of a website for a hotel business”. Similarly, “We do not understand the advantages”.

Other respondents said that they had not investigated the advantages, while others stated that they did understand the advantages of a website but there was a lack of understanding how their small hotel could benefit from this technology. For a few hoteliers this was changing; one respondent explained this change as

follows: “At the beginning, we did not have the awareness of the advantages of a website, but we are now planning to get a website for the hotel in the near future”.

Usefulness of website

Many respondents thought that the importance of the usefulness of a technology affects its adoption for their business; the non-usefulness of a website was pointed out as a significant factor for the non-adoption of a website in small hotels by 19% of the respondents. This prevalent theme was expressed as follows: “We think it is not useful for our small hotel business”. Other comments from other respondents included that websites are not necessary for small hotels.

Some respondents highlighted that a website was a means of communication. However, for non-adopter hoteliers, their customers do not require access to a website to obtain the service or products offered by small hotels; this was expressed in the following response: “there is no situation that would require us to communicate using a website”.

Planning to adopt

Some respondents (13%) stated that they were aware of the advantages of a website. The technology can help to increase their customer base and advertise their hotel. The implementation of a website by a hotelier was expressed in the following response: “We are developing our website at the moment”.

The significance of a website was widely discussed and at least eleven respondents indicated that a website provides many advantages for the hotel sector. These respondents said that they had a plan to have a website as expressed in the following response: “We are planning to have a website in the future”. At least another two respondents expressed some level of interest in owning a website in the future; this point was expressed as follows: “We did not think about getting a website until now, but we may get one in the future”.

Knowledge

Many respondents mentioned the lack of knowledge of a website as a factor for the non-adoption of a website in their business. A website needs to be maintained from time to time, corrective action needs to be taken when things go wrong, or new features need to be added to reflect the services or products introduced in the hotel. A typical comment includes that there is no one in the hotel with the knowledge to support a website, and this view was expressed simply as follows: “we lack the knowledge”.

Knowledge about a website and its significance for the hotel business was cited by 11% of respondents. Typical comments include: “We do not know anything about a website”. Another respondent expressed lack of knowledge as follows: “we do not have the necessary knowledge”.

Finance/price

Several respondents pointed out affordability, lack of resources, and limited finance, as factors for the non-adoption of a website for their businesses. It appeared that small hotels with limited customer numbers generate limited finance. Furthermore, these hotels also lack the knowledge to use a computer. These factors hinder the introduction of a website, and one respondent expressed this as follows: “the hotel is a small establishment with low returns and also we do not have the knowledge to use a computer”.

Some respondents pointed out limited finance of small hotels as a significant factor for limiting what technology can be introduced in their establishments. The limited finance available has to cover all the outgoings, what is considered essential to run the establishment, and then whatever is left over is not sufficient to introduce new technology. The following respondent summarised this point: “We have a small hotel with limited financial strength”. Another respondent described it as follows: “We do not have the ability to finance it”.

Size of the hotel

A few respondents discussed the size of the hotel establishment as a main factor for non-adoption of a website; it was emphasised that there is no requirement to have a website for small hotels. Many of the customers of the hotels have no access to computers and the Internet; therefore, it is not possible to attract any additional customers. This view was pointed out by one respondent as follows: “we have a small hotel and we think it does not require a website”.

The significance of the size of a hotel was discussed with regard to its financial ability, its customer base, and what is required to provide the services and products to its customers. As a result of its size, the profit generated is limited and hence with limited finance only what is deemed essential to run the hotel gets priority. Owning a website or introducing an Internet cafe is not considered an essential part of the operation. Furthermore, these require a high level of investment that is not affordable by small hotels. Two of the typical comments include: “our business is very small”, and ”our business is very small and it does not require the Internet for its operation.”

Customers/demand

Some respondents pointed out the significance of the hotel’s customers as a factor for the diffusion of ICT. Many of the small hotels attract local customers, with no access to e-mail, computers, the Internet, or websites. Therefore, these hotels are not encouraged to introduce ICT in their businesses. It appears that hotels with customers who have no access to ICT, seem not to adopt websites or any other ICT tools in their premises, as there is no demand from their local customers. One respondent summarised this point as follows: “The customers are not users of this technology”.

Tenancy of business premises

Hotels that rent from the AARH expressed difficulties, such as not being able to renovate the premises, or install new systems. Furthermore, tenancy agreements

can also be terminated by AARH, and tenants can be forced to evacuate the property within weeks; this creates difficulties to plan and invest in new ICT systems. Respondents expressed this view as follows: “We rented the property from the housing agency and we experience a great deal of problems to expand or improve the hotel.” Another respondent expressed a similar view as follows: “there are difficulties in improving the hotel because we are tenants of the housing agency”.

7.11 Conclusion

This chapter has presented the data from the field surveys for both hoteliers and tour operators. The data demonstrate that respondents lack knowledge and awareness to adopt ICTs. The data also show that adoption is driven by foreign customers of these businesses. In contrast, there is no demand from local customers. Furthermore, the adoption/rejection of ICTs was affected by various factors. The list of reasons for each ICT is presented in Appendix A. The next chapter presents the interpretation and discussion of these various reasons.

The data indicate that there are many factors that influence the adoption of ICT in the hotel and tour operator business. The main factors for adoption and non-adoption are presented in Appendix A. The main factors for adoption are: demand from foreign customers, network externalities and competition among hoteliers. The non-adoption factors include: lack of usefulness, lack of finance, lack of awareness and knowledge, and being small in size.

Chapter 8 Discussion of findings

8.1 Introduction

This chapter presents the discussion on the findings of the research. The discussion is based on the data presented in Chapter 6 and Chapter 7 in conjunction with the background in Chapter 2 and the literature review presented in Chapter 3 . The discussion starts with the presentation of which ICTs are adopted or rejected. It is then followed by the factors that explain the adoption or rejection of ICT in these businesses. Furthermore, it discusses how these factors are related to other similar studies. It then goes on to present how these factors arise from different levels including: from the individual adopter, the characteristics of the adopting organisation, the sector these organisations operate in, and the national and international contexts. It then goes on to present how the proposed new theoretical framework relates to the findings and its implications for further research.

8.2 Summary of the findings

The level of adoption of ICTs is summarised below:

ICTs Tool	Hoteliers (n=128)		Tour operators (n=57)	
	Adopters (%)	Non-adopters (%)	Adopters (%)	Non-adopters (%)
Mobile phone	100	0	100	0
Computer	35.2	64.8	100	0
Broadband	14.8	85.2	98.2	1.8
Website	12	87.5	93	7
E-mail	32.8	67.2	98.2	1.8

Table 8-1 Adoption of ICTs by hoteliers and tour operators in Addis Ababa, Ethiopia

This research focused on small micro hotels and tour operators in Addis Ababa, Ethiopia. It tries to find the factors that affect the adoption of ICTs (mobile phones, computers, broadband, websites, and e-mail systems) in these businesses. The findings indicate that some of the individual and organisational level factors that affect the adoption of ICTs can be explained using Rogers' diffusion of innovation theory (Rogers 2003). However, it was also found that the local situation, governed by political, economic, social, technological, and legal (PESTL) factors, plays an important role in the adoption process. The findings of this study will be presented from the perspective of both Rogers' theory of diffusion and the proposed theoretical framework.

The single monopolistic telecommunications service provider is unable to satisfy the growing demand. For example, according to the available data for landline waiting times (Figure 2-1), there were 18,548 individuals on the waiting list in 2009. Furthermore, the lack of competition in the sector has resulted in high prices for customers. The prices for telecommunications services are falling in the sector; the latest figures from ITU indicate that there is a reduction of 71% in the price of broadband. The price in Ethiopia has dropped but it is still too expensive for many people. The price of broadband as a percentage of GNI per capita was 85% in 2011, in 2013 the price had dropped to 71% of GNI per capita.

The usability of ICT systems increases with the introduction of applications that provide new services and encourage potential users to adopt ICTs. For example, the introduction of M-Pesa in Kenya and Tanzania, a mobile money transfer service via mobile phone technology, enables millions to own a bank account and has accelerated the adoption of mobile phones in these countries. While in Ethiopia, the introduction of similar financial services through a mobile phone was expected to be operational in January 2014, but has not been implemented yet. The absence of such applications so far has not helped the penetration level in the country.

The general absence of diffusion of ICT to the wider public in Ethiopia reduces the demand for the use of ICT in many sectors, including hotels and tour operators. Organisations adopt ICT if there is a demand from their major customers; in the case of the majority of hoteliers, their major customers have no access to ICT, therefore, there is no demand for the hoteliers to adopt ICT.

There are some international level factors arising from the nature of the cross border functionality of ICTs, which necessitate negotiations and agreements on many fronts. These negotiations, including the addition of new technology standards and use and the discontinuation of old systems, forces countries to adopt these new technologies. International organisations prescribe policy changes based on best practice in a certain context. Some impose policy change as criteria for membership; for example, Ethiopia's membership of the World Trade Organisation (WTO) has been stalled because of WTO's request for the liberalisation of the telecommunications and banking sectors in Ethiopia. International organisations, such as the International Monetary Fund (IMF) and the World Bank (WB), provide loans for development and various other projects, and in some cases these loans are conditional on adopting prescribed policies. These changes of policies have effects at the grass root level in these countries. These changes of policies have some level of coercive elements in the relationship between the international organisations and the developing countries. Previous research by DiMaggio and Powell (1983) has concluded that coercive pressures, arising from formal and informal sources such as regulatory bodies, resource dominant organisations or dominant customers, cause the adoption of technology in an organisation.

All hoteliers and tour operators have adopted mobile phones. However, among society in general, the adoption level is 23 per hundred inhabitants. The adoption characteristics for hoteliers and tour operators are different for ICT tools such as computer, broadband, website and e-mail systems.

In the case of computers, all tour operators have adopted computers; on the other hand, only 35.2% of hoteliers have adopted computers. The adoption rate in the country is 1.8% of households. The adoption of broadband provides a contrasting result between hoteliers and tour operators. The vast majority of tour operators, 98.2%, have adopted broadband, whereas only 14.8% of hoteliers have broadband in their businesses. Internet users in Ethiopia represent 1.1% of the population. The use of the Internet is in its infancy.

Other major reasons for non-adoption of ICT in the hotel and tour operator business are affordability, lack of knowledge and awareness of ICT, and the lack of availability of ICT services in the country; the available data indicate that many thousands are on the waiting list of the telecommunications service provider for a wired telephone line (ITU 2002).

ITU (2013) argues that affordability of ICTs is the prime factor that affects the adoption process. For many people ICTs are not affordable, because of government policies such as high import taxation (40%), high running costs, and lack of competition in the sector. Unavailability of skilled human capital has also affected the adoption of ICTs such as online web services. Some small hotels that are renting their business premises from the government are held back from adopting ICT because they are not allowed to install sockets and their tenancy agreement could be terminated at any time by the AARH. The lack of guarantee from the AARH is exacerbated by the absence of legal protection. On the other hand, network externalities, customer demand, and competition among the hoteliers are the main factors that increase the uptake of ICTs in the hotel and tour operator business.

The Ethiopian government has made a political decision to keep the only telecommunications operator in public ownership, which impedes ICT diffusion. Furthermore, for hoteliers the monopoly extends to software, and hardware supply and maintenance, and this negatively influences the diffusion of ICT. The

government policy on the telecommunications sector is an extension of the political system, the sector is implementing the political programme of the ruling party (Gagliardone 2014).

8.3 Knowledge and awareness of ICTs by hoteliers and tour operators

Rogers (2003) shows that for an innovation to be adopted, the potential adopters have to be aware of its existence and have some level of knowledge of how to use the innovation. Though some technologies are easy to use, others require some level of training and knowledge to use it effectively. The data in Chart 7-13, indicate that 55% of hoteliers do not have any computer knowledge, while all tour operators have some level of knowledge as shown in Chart 7-15. When one looks at the education level of hoteliers, 45% have completed secondary school while 53% of tour operators have an undergraduate degree. The data also indicate that 65% of hoteliers are non-adopters of computers while 100% of tour operators have adopted computers.

The implication of this result is that knowledge and awareness of an innovation are factors for the adoption of computers. The findings concur with other studies, for example Tabak and Barr (1996) argue that a higher level of education tends to influence a high level of adoption, and Brancheau and Wetherbe (1990) demonstrated that educated people tend to be early adopters of a technology. Generally, educated people tend to have a higher income that enables them to absorb the cost of adoption.

Similarly, hoteliers who did not have any knowledge of broadband and websites accounted for 60% and 62% of respondents respectively, as a result of this the non-adoption figures for broadband and websites were 85% and 87% respectively. On the other hand, in the case of tour operators, all had some level of knowledge of broadband and websites, accordingly the adoption rate was 98% and 93% respectively. This demonstrates that potential adopters who have a higher level of

education, knowledge, and awareness of an innovation, tend to be early adopters of the technology. However, education, knowledge and awareness of an innovation are not the only factors for adoption of an innovation as will be demonstrated in the following discussion.

8.4 Adoption of ICT tools in the hotel and tour operators businesses

Adoption of ICT tools is seen by many as a critical factor for development and poverty reduction (UN 2002, ITU 2001, NEPAD 2009). The ICT Development Index rank for Ethiopia indicates that it is lagging behind other developing countries; in 2011 it ranked 150 and in 2012 it ranked 151. Though it shows an increase in the uptake of mobile phones compared to 2011, it is not growing as fast as other developing countries.

8.4.1 Mobile phone adoption in the country

Mobile phones are one of the most adopted ICT tools in hotels and associated businesses. Almost all businesses have adopted mobile phones. It is the main tool of communication, particularly for small and micro businesses. However, the adoption of mobile phones among the general public is very low. The latest data from ITU (2013), as shown in Table 2-1, indicate that mobile phone subscription per houndered inhabitants in 2012 was 23.7.

ITU (2013) argues that affordability is a major factor that affects the adoption of ICT. The latest affordability figure indicates that mobile phone affordability, measured by the percentage of GNI per capita, is 11.4%. To increase mobile phone ownership, making it affordable for the majority of potential customers, GNI per capita has to increase or the price of mobile phones has to fall. An increase of GNI per capita is dictated by the general economic situation in the country, including the management of inflation. However, reduction of the running costs of a mobile phone can be achieved by using various policies, such as reduction of taxation and introduction of competition in the market. Recently, the

telecommunications operator has reduced mobile phone running costs; this has resulted in an increase in the uptake of mobile phones. However, the above adoption resistance agents still have an impact on the adoption level.

One of the positive facilitator agents that increases the uptake of mobile phones is network externalities (Shapiro & Varian 1999). Network externalities are created as a result of a postive value generated because of the adoption of a technology by many people. The positive value of a network increases as many people adopt and use it. A typical example is the telephone network, its benefit increases as many adopt and use it. As families and friends adopt the new technology, others tend to follow, to keep in touch with their families and friends.

Other notable factors that facilitate the adoption of mobile phones are the availability of applications that provide innovative solutions to a problem. For example, the introduction of M-Pesa in Kenya and Tanzania helped to increase the adoption of mobile phone technology in these countries. This application provides a banking facility for many who were otherwise not been able to use banking facilities. In Ethiopia a similar service called M-birr[13] was planned to start in January 2014, but the implementation has been delayed.

8.4.2 Computer adoption and use

Computers are one of the core ICTs tools that create an enabling environment for the communication, processing and use of information. It is one of the critical tools that enables businesses to operate efficiently, facilitates expansion of businesses, and enables faster and cheaper means of communication with their customers and other businesses.

As indicated in Table 8-1, 35% of hoteliers and 100% of tour operators have adopted computers. There is a significant difference between the two groups on

[13] Birr is the name of the currency in Ethiopia.

the adoption of computers. In the case of tour operators, 45% stated that the computer is an essential tool for their businesses, whereas only 6% of hoteliers expressed a similar view. For those whose customers are foreigners, they need to communicate with them using e-mail, and a computer is an essential tool for that. Tour operators exchange information with their potential customers, mainly about tour plans, availability, pricing, and any other information requested by their customers. Similarly, hoteliers mentioned the same reason, that computers are used to communicate with their foreign customers. The main information exchange is about availability of rooms, pricing and other services offered by the hoteliers. Foreign customers are the major income generators for tour operators and hoteliers that have the facilities to provide services to these customers. These customers normally communicate using e-mail and get their information from websites. Tour operators and hoteliers have to use similar technology to communicate with them, and this has resulted in the adoption of technology required to do so. Therefore, foreign customers are the main factors for the adoption of computers for hoteliers and tour operators. The variation of adoption between hoteliers and tour operators is a reflection of their customer base. The customers of tour operators are 100% foreigners, so ICTs are an essential tool for the operation of their businesses. While some hoteliers whose customers are foreigners have adopted the technology, others have not. A study by Lefebvre and Lefebvre (1996) also showed that major customers act as a facilitator factor in the adoption process.

Rogers (2003) argued that the characteristics of an innovation are a critical factor for its adoption in society. The data indicate that the positive perceived value of a computer facilitates adoption; characteristics pointed out by research participants included: creating efficiency, use for accounting and facilitating an easy way of storing and retrieving data. All these usability factors drive the adoption of computers in the hotel and tour operator business. Similarly, previous research has found that positive perceived usefulness of an innovation increases adoption (Davis 1989, Mehrtens et al. 2001).

Many respondents stated that that they use pen and paper in their hotel business. They added that for all the things they do, they do not need to use a computer for their business. A similar study in Kenya indicated that for small businesses, users did not find the computer added any value and hence they did not adopt it (Moyi 2003). In this research, the data also gives a similar result, that many hoteliers did not find the computer useful for their hotel operations. Typical responses from participants included: “computers are not required” or “not necessary for the operation of our hotel”. There is a lack of knowledge for identifying appropriate applications for hotel operations. This perception of not being able to identify any use for a computer acts as a barrier. The lack of knowledge and skills in identifying existing computer applications that provide advantages to hotel operations requires awareness of both computer technology and hotel operations.

Furthermore, many available applications that are used in the hotel business are not readily available in the local languages, thus creating further barriers. There are a number of organisations, such as the Ministry of Communications and Information Technology (MICT), that can offer demonstration of usefulness of computer systems and create awareness, so that it can improve the uptake of computers in the sector. In addition, AACC can also be a facilitating factor by providing basic computer skills for its members to close the gap.

Traditional pen and paper are used in many hotels. In some cases, owners/managers are aware of the advantages of a computer, but the cost of switching from pen and paper to a computer is too expensive for many hoteliers. Furthermore, the cost of switching includes the cost of the computer and other essentials such as printers, software, and skills and knowledge required to operate the computer. A high switching cost can be a barrier to the adoption of innovation. A study by Shapiro and Varian (1999) found that the cost of switching can be a determinant factor for the adoption of innovation. The switching cost is the cost of the new system compared to the cost of the existing system; the new system, a

computer, is much more expensive than the pen and paper used currently. In Ethiopia, there are no computer manufacturers, they all have to be imported, and 40% import tax needs to be paid on any imported computer. The switching cost for the adoption of computers is increased because of the 40% import tax on ICT equipment.

Many researchers have argued that the size of the adopting organisation is a factor that influences the adoption of technology (Damanpour 1992, Thong 1999, Palvia et al. 1994). Organisational size is directly proportional to the available slack resources, financial and human, technological know-how and past experience and exposure to new technology. Small organisations normally have very little slack financial resource, limited knowledge and very little technological know-how, especially in developing countries. The data in Table 7-5 indicate that the size of the organisation, as measured by the number of staff, affects adoption levels, so the larger the organisation, the more likely it is to adopt a computer.

There are small hotels that rent their business premises from the AARH; these hotels are restricted from changing any of the internal facilities of the premises, including installing electrical sockets. This restriction is found to be a barrier for the adoption of computers. Furthermore, the AARH has the right to remove tenants by giving them two weeks' notice, this does not encourage hoteliers to invest in technologies.

In conclusion, a number of factors were identified that affect the adoption of computers in hotel and tour operator businesses, including their customer base, size of the establishment, government tax, switching cost, lack of knowledge, and even their tenancy agreement.

8.4.3 Adoption of wired-broadband

The data indicate that many hoteliers have not adopted broadband (85%), whereas 98% of tour operators have adopted the technology. There is clearly a marked difference between these two groups of adopters. The difference arises because of the different customers that these two groups are serving. Almost all tour operators' customers are foreigners while most of the hoteliers' customers are locals. All tour operators' customers book their tours through the Internet and communicate using mainly e-mail, so it becomes essential for tour operators to adopt broadband technology. Other researchers also found similar results; the demand of their major customers put pressure on the organisation to adopt the technology (DiMaggio & Powell 1983, Mehrtens et al. 2001).

The data show that hoteliers who have foreign customers state that broadband is very expensive, but it is essential to attract these customers. Their customers always request availability of free Wi-Fi in the hotel. If there is none, they will not book. Some hoteliers stated that it is mandatory to have broadband in the hotel and provide Wi-Fi to customers. If there is an interruption in Internet service, almost all customers will check out and move to other hotels which have Wi-Fi services.

For hoteliers, having broadband and providing Wi-Fi to their foreign customers becomes a source of competition. Having fast Internet connection attracts foreign customers. This competition has encouraged the adoption of broadband in the hotel sector. The data indicate that 89% of hotels that have a Wi-Fi facility in their hotels provide it as a value added service and only 11% charge for this service. Hoteliers that adopt broadband and provide free Wi-Fi for their customers, indicate that as a result of free Wi-Fi they have a competitive advantage in attracting lucrative foreign customers. Lacovou et al (1995) and Porter (1985) argue that a technology that provides a competitive advantage is likely to be adopted by competing organisations.

On the other hand, the majority of hoteliers' customers are local and most of them are not users of the Internet. The latest data from ITU (2013) indicate that fixed broadband subscription in the country is 0% while the proportion of households with Internet access is 1.9%. The implication of this low level of adoption of broadband in the country indicates that hoteliers that serve local customers will not use the Internet to book hotel rooms or services. Therefore, it is unlikely that these hoteliers are encouraged to adopt broadband when there is little or no demand coming from their major customers. Furthermore, hoteliers state that the Internet does not provide advantages to their business. Hoteliers do not use the Internet for communicating, marketing, information seeking or any other business activities. In general, there are no requirements for broadband in most of the hotels.

To adopt wired-broadband, a telephone line is required. However, the shortage of wired telephone lines restricts the adoption of broadband systems. The latest available data (Figure 2-1) showed that at the end of 2009 there were 18,548 individuals on the waiting list for a telephone line. The only telecommunications operator in the country has failed to satisfy the demand. Therefore, shortages of telephone lines are a barrier to the adoption of broadband.

The affordability of a broadband system is a major factor that affects the adoption of broadband. The latest figure from ITU (2013) indicates that the price of broadband is 71% of GNI per capita in Ethiopia. This is very expensive for many millions of people in Ethiopia. One only needs to look at the level of penetration for wired-broadband per 100 people in the country, which is zero. In Ethiopia, not only broadband but other ICTs are unaffordable for many millions of Ethiopians. The result is a low level of adoption of ICTs resulting in a low level of IDI increase, which indicates that the country is lagging behind in the development of ICT compared to sub-Saharan countries.

GNI per capita is an indicator of the country's economic strength and standard of living, including the social, economic, and environmental conditions of the country and its people. The ICT Development Index is also affected by GNI per capita; countries with a high level of GNI per capita tend to have a high level ICT development. However, according to ITU (2013), countries with better ICT policies, and a proper regulatory environment, which allow high levels of competition, tend to have high levels of IDI with an average GNI per capita. For example, as shown in Chart 2-1, Botswana has higher GNI per capita compared to Moldova but has low IDI. Ethiopia is an importer of all ICT equipment. The 40% import tax on all ICT equipment has an impact on affordability. Furthermore, the high level of inflation, 31% in 2013, and the devaluation of the currency by 50%, makes ICT equipment very expensive.

The size of a hotel matters for adoption, the smaller the hotel, the more likely that it does not have the finance or the skills to use a broadband system, and hence they are non-adopters. The data also confirm that 97.3% of hoteliers who have 10 or less staff members had not adopted broadband. Whereas 75% of hoteliers with staff numbers of 76-100 had adopted broadband. Furthermore, the data indicated that 100% of hotels with staff numbers of more than 100 had adopted broadband in their businesses. However, the data also show deviant cases, hoteliers with staff numbers of 51-75 had not adopted broadband. These hotels had been established for many years. The customers of these hotels are locals with no access to the Internet, hence there was no need for these hoteliers to adopt broadband in their businesses.

Hoteliers' awareness and knowledge of broadband plays an important role in the adoption of broadband systems. Most hoteliers, as shown in Chart 7-12 (60%), did not have awareness or knowledge, and hence 85% of them did not adopt broadband technology in their hotels. On the other hand, all tour operators had some level of knowledge about broadband. Tour operators' knowledge, coupled with their customers' demand, resulted in 98.2% adoption of broadband.

Information that can be accessed in a format and languages accessible to users increases the usability and benefits for broadband adopters. Mun-cho and Jong-kil (2001) argue that, without accessible information that can be utilised and help users to enrich the quality of life for themselves and others, increases the digital divide. The data indicate that there is a lack of available information for hoteliers and tour operators in Ethiopia. For example, one respondent stated “the information available on government websites is four to five years old”.

8.4.4 Website adoption

Website technology has been adopted by the majority of tour operators (93%) and a minority of hoteliers (12%). The data from adopters of websites (68% of hoteliers and 60% of tour operators) indicate that the main factor that influences them to adopt website technology is its use as a marketing medium for their businesses. For the adopters, what convinces them is to use their website as a gateway to inform, communicate, and engage with potential customers. Other factors include its usability, in terms of providing information in a format accessible to potential customers. Furthermore, a website’s ability to provide a permanent presence for the business on the World Wide Web increases the reach of the business. Studies (Musante et al. 2009, Schmidt et al. 2008) have also shown that hotel websites are used as a mass media tool to advertise their businesses, providing cheap advertising and a marketing platform.

The majority of hoteliers have not adopted website technology. The adoption barriers that were mentioned by the respondents included that there was no customer demand for the adoption of this technology. Furthermore, the data indicated that the customers of these non-adopter hoteliers are not users of the Internet. Another notable barrier is that there is no advantage for hoteliers to adopt this technology, as their target customers are not on line and the businesses would not benefit from adopting website technology.

In addition, these hotels are small; as the size of an organisation decreases, so the available resources, including skilled workers to maintain the website, the high price of creating the website, including hosting and maintaining the website, place it outside the reach of most small hotels.

A website is not advantageous for small hotels, as it does not attract additional customers to the businesses; they say that their potential customers do not have access to the Internet, they have mainly walk-in customers, and a few customers use mobile phones to request availability of rooms in the hotels. Non-adopter hoteliers state that, firstly, there is no demand for a website from their customers, and secondly, there is a lack of finance and lack of skilled staff to manage a website.

The data also show that websites for both hoteliers and tour operators are not updated regularly. These websites are mainly used only as an information post for the hotels and tour operators, with contact addresses, telephone numbers and e-mail. In many cases these websites do not have online booking facilities; the websites are not interactive or engaging, and are therefore not effective in attracting customers. A study by Schmidt et al (2008) confirms that interactivity of websites increases their effectiveness in businesses.

8.4.5 E-mail adoption

E-mail is the most widely used communication tool (98.2%) adopted by tour operators. It is adopted to a lesser extent by hoteliers (32.8%). E-mail communication is critical for the operation of those hotels and tour operators whose customers are foreigners. For these businesses, availability, pricing, booking request and confirmation are communicated using e-mail. The unavailability of e-mail or lack of access results in loss of potential customers.

The widespread use of e-mail as a means of communication, its characteristics such as ease of use, low cost, speed and reliability, make it a preferred means of communication for many. The main factors for the adoption of e-mail by hoteliers and tour operators are to use it for communication with their major customers resulting from network externalities. The benefit of e-mail increase as the number of people using it increases, this is what is known as network externality (Markus 1987, Katz & Shapiro 1986).

Hotels and tour operators adopt e-mail to communicate with their customers; on the other hand, hoteliers that have local customers have not adopted e-mail. The study by Lefebvre and Lefebvre (1996) also confirms that major customers and competition are factors for the adoption of technology.

8.5 Use of ICTs in hotel and tour operator businesses

The data as shown in Table 7-12 and Table 7-13, indicate that for both hoteliers and tour operators, the main applications, word processing (51% or more) and spreadsheets (61% or more), were used frequently. ICTs were limited to basic use. The use of ICT to only a basic level is a reflection of the non-availability of appropriate applications and skilled human resources. Research by Chiware and Dick (2008) on the use of ICT by SMEs shows a similar result.

The unavailability of appropriate applications in the sector is reflected in the use of basic applications by hoteliers and tour operators. Adoption of technology without effective use of applications and available appropriate timely information would not be effective for enhancing knowledge or increasing productivity and competitiveness for the adopting businesses. The absence of innovative applications, for the sector in particular and to the wider public in general, becomes a barrier to adoption.

8.6 The Impact of unavailability of ICT on the businesses

The data, as shown in Table 7-14 and Table 7-15, show the impact of unavailability of ICT systems on hotel and tour operator businesses. The result indicates a marked difference between the two groups. The majority of the tour operators (95%) stated that unavailability of e-mail has a major impact on the business, followed by website (82%) and accounting and planning (77%). In the case of hoteliers the most important ones were accounting (71%), spreadsheets (44%), followed by e-mail (31%). The underlying reason for the variation between the two groups is their customer base. The majority of tour operators and the minority of hoteliers who adopted ICT have foreign customers. These businesses rely heavily on their e-mail, website and broadband systems to be able to continue operating their businesses. However, the vast majority of hoteliers that did not adopt ICT also indicated that the majority of their customers are locals and do not use ICT. The results from both phases of this study indicate that, for businesses that adopt ICT, the critical systems that had significant impact on the businesses are their e-mail and Wi-Fi systems.

8.7 The link between theoretical framework and findings

This section establishes the link between the theoretical framework developed in Chapter 4 and the findings of this research. The facilitator and resistance agents of the research findings are shown above in Table 8-2. The findings of the facilitator and resistance agents and their possible sources, the macro sources provide the link between the findings of the study and the theoretical framework. In this particular research it was found that the political, economic, social and technological factors played a significant role in the adoption of ICT in the hotel and tour operator businesses.

The theoretical framework developed in chapter 4 is illustrated in Figure 4-5. In this theoretical framework it was argued that the adoption characteristics of individuals and organisations can be explained using Rogers' diffusion of

innovation theory. The typical tour operator and hotelier are described in Table 8-3. The typical tour operator is young, educated to degree level, has knowledge and awareness of ICT, seeks information using ICT tools and is an adopter of ICT. On the other hand, the typical hotelier is older, less educated, has no knowledge or awareness of ICT, and is not an adopter of ICT. This is a classic explanation of adopters and non-adopters using Rogers' diffusion of innovation theory.

The factors affecting the adoption of ICT arising from organisational characteristics have indicated that small hotels are not adopters of ICTs, and are limited by resources including lack of finance, knowledge, awareness and absence of demand. However, tour operators, although their businesses are small, are all adopters of ICT. The comparison between these two groups and the adoption and non-adoption characteristics are given in the next section. The national and international level factors and the link between the proposed theoretical framework and the findings are presented below.

ICT	Agents of adoption/non-adoption	Facilitator/ resistance factors	National level factors
Telecommunications sector	Monopoly, lack of competition in the telecommunications sector	Resistance	Political policy
Telecommunications sector	Lack of independent telecommunications regulator	Resistance	Political policy
software	CNET	Resistance	Political policy
Hardware	Petram	Resistance	Political policy
ICT	40% import tax on ICTs, 24-44% inflation, low level of GNI per capita	Resistance	Economic policy
Broadband	Competition among hoteliers	Facilitator	Economic situation
ICT	Gender gap	Resistance	Social policy
Computer, Internet and website	Lack of knowledge and awareness	Resistance	Social policy
ICT	Network externalities	Facilitator	Technological characteristics
Computer, Internet and website	High level of knowledge demand	Resistance	Technological characteristics
Applications, such as M-Pesa	Absence of appropriate ICT applications	Resistance	Technological
Broadband/Wi-Fi/e-mail	Major customers	Facilitator	Sectoral
ICT except mobile phone	Small size organisations	Resistance	Organisational
ICT	Lack of customer protection law, lack of protection law for tenants	Resistance	Legal

Table 8-2 List of agents of adoption/non-adoption, facilitator or resistance factors, and national level factors

8.7.1 The role of owners/managers in the adoption process

The owners/managers of hotels and tour operators are active young professionals; in the case of hoteliers 43% of the participants were in the age group of 21-30, and for tour operators 58% were in the age group of 21-30. The tour operators have a higher level of education, 53% of the participants have an undergraduate degree whereas 45% of the hoteliers have completed secondary school. However, hoteliers have more experience than tour operators, 45% of hoteliers have ten years' or more experience and 39% of tour operators have 1-3 years' experience. The data indicate that hoteliers have more experience but a lower level of education.

Typical tour operator	Typical hotelier
Young, mainly between 21-30	Relatively older than tour operators
Educated to degree level	Educated to secondary level
A few years of experience	At least 10 years' experience
Has a perception of knowledge of ICTs	Has a perception of not having knowledge of ICTs
Had sector specific training	Had no sector specific training
Knowledge gained through formal education	Knowledge gained through work experience
Adopter of ICTs	Non-adopter of ICTs
Seeks information through the use of ICTs	Does not seek information using ICT

Table 8-3 Comparison of typical tour operator and hotelier

The results from the study indicate that owners/managers who had a higher level of education tended to adopt ICT in their businesses. Owners/managers of hotels and tour operators with at least a diploma or degree tend to adopt computers, Internet, and e-mail in their businesses. This result confirms results from other

studies (Rogers 2003, Moore & Benbasat 1991, Kiplang'at & Ocholla 2005, Greenhalgh et al. 2004).

8.7.2 Organisational level factors

Internal organisational factors play an important role in the adoption of ICT in the hotel and tour operator business. The results from both phases of the study indicate that the size of the organisation, measured by the number of staff employed in the organisation, indicate that the higher the number of staff employed by the hoteliers the more likely that the organisations adopt ICT. For example, hoteliers that adopt computers are relatively medium sized hotels with at least 50 or more staff. For many micro hoteliers with a staff count of less than 10, the data indicate that there is no adoption of computers, broadband, website, or e-mail systems as shown in Table 7-5, Table 7-7, Table 7-9, Table 7-10. The data show that the larger the size of the organisation, the greater the possibility of computer adoption. Other researchers (Damanpour 1992, Palvia et al. 1994) have reported this positive correlation of size of an organisation and the adoption of technology. Other characteristics that relate to the size of organisations are slack resources, particularly finance and human resources, and are the main factors for the adoption of ICT. Small and micro businesses tend to lack slack resources, especially finance, lack of knowledge and awareness of ICT, and skilled human resources, to adopt ICT tools. However, tour operator businesses were almost all micro businesses but do adopt ICT in their businesses; these deviant cases result from the characteristics of their unique sector requirement that necessitates the adoption of ICT in their businesses to communicate with their major customers.

8.7.3 Sectoral conditions

The available data from GDI indicate that the sectoral absorption of the Internet in the country is 0.5 from a possible score of 4 (Press et al. 1998). During the initial

phase of this research, it was found that the adoption of ICT by different sectors was very low. However, the hotel sector was found to have both adopters and non-adopters of ICT. The sector characteristics indicated that there are two groups of hoteliers: the first group provides services for the local population, while the second group caters mainly for foreign customers. The second group adopt ICTs in their hotels. The demand from foreign customers forces the second group to adopt Wi-Fi in their hotels, as it is a necessary requirement to attract these customers and be competitive. In almost all cases, the customers of tour operators are foreigners, hence they adopt ICT. Other researchers also confirm the results of this research, that organisations adopt technology to be competitive (Porter 1985, Lefebvre & Lefebvre 1996, Mehrtens et al. 2001, Nyariki 2011).

Customers as facilitators of adoption

It is logical that hoteliers and tour operators focus on what their customers demand. Although broadband adoption by hoteliers is very low, those who adopted the technology emphasise that the main aim of adoption is to satisfy their customers. Many hoteliers, who adopted broadband, described that in almost all cases their customers were foreigners. These customers have Internet access in their home countries, and their entire social and professional communication is conducted using the Internet.

To attract these customers, hoteliers adopt broadband. Hill (1994) also noted the influence of major customers on adoption. Most of the hotels that adopt ICT have facilities that provide excellent to good services. In most of these hotels, the hotel charge is comparable to similar hotels in developed countries. The data from the hoteliers indicate that, in many cases, the prices of the hotels are not affordable for the local community. It also indicates that the majority of customers in these hotels are foreigners. This suggests that the customer base of these hotels are not local guests.

Hotels that are catering for foreign customers are not affordable for the local community; according to the UNDP Human Development Report of 2012, 88.6% of the Ethiopian population is poor. Furthermore, the data also indicate that 72.3% of the population is trapped in severe poverty (UNDP 2011). Consequently, the local community cannot afford the prices of these hotels; hence, the main customer base of these hotels are foreign guests.

The customers of these hotels are users of ICT for their social and professional activities, including booking of hotel services. Therefore, hotels need to provide the services and products required by their customers. As Lefebvre and Lefebvre (1996) argue, companies most often engage in the adoption of technology that is demanded by their major customers. The adoption of wireless Internet and business centres are the result of demand from their major customers and competition among hoteliers.

8.7.4 National level factors

The national context plays a vital role in the availability and affordability of ICTs in the country. The international context also has some level of impact, but to a lesser extent. The national context is reflected in the country's PESCTEL conditions. Many researchers argue that the national context is a critical factor in the state of telecommunications service provision (Li et al. 2005, Compaine 2001, Henisz & Zelner 2001). Norris (2001) and Compaine (2001) argue that the political factor is critical in reducing or increasing the digital divide.

Chisenga (1999) in his study of content generation in Africa, its availability and access, argued that the political barrier of censorship, monopoly of the telecoms sector and erratic power supply are major difficulties faced in the continent. Furthermore, the role of social media in the Arab revolutions makes African countries wary of the technology (Shirky 2011, Kietzmann et al. 2011). In Ethiopia,

after the contested 2005 election, where the opposition claimed victory, the disturbance following the demonstration called by the opposition, 200 individuals lost their lives and tens of thousands of people were imprisoned. It was stated that text messaging was used to organise the demonstration and as a result, the government shut down text messaging nationally for two years (Blunt 2007). Galal and Nauriyal (1995) also Levy and Spiller (1996) argued that political structure plays a very important role in the structure and operation of telecommunications services in the country.

Political policy factors

The adoption of ICT can have unanticipated effects, to quote from Soper and Demirkan (2012, p 22) on the recent effects of ICTs:

> *"If there is a more general lesson here, it's that ICT adoption can have unanticipated effects that reach far beyond the scope of individuals, groups, or organisations. Mobile phones, for example, weren't designed to foster democracy in emerging societies, and yet they do. The Internet wasn't designed to constrain corruption in emerging societies, and yet it does. What we find most fascinating is that the effects do not seem to result from any international or concerted action on the part of the users of these technologies. Rather, they seem in general to be emergent properties that arise naturally when citizens in emerging societies adopt ICTs and integrate them into their lives."*

The Ethiopian government is wary of what ICT can do, or how it can be used in society, in the light of the Arab Spring. The government has resisted liberalisation of the telecommunications sector, the repeated response given by various Ethiopian ministers was that "we are not ready to liberalise the telecommunications sector".

In Ethiopia, the governing party has been in power for the last 20 years. Although there are elections every 5 years, there is only one opposition member in the

current parliament. The policies are formed in the governing party's private interest. The policy is therefore guided by the interests of the incumbent government that runs the country. Other researchers (Galal & Nauriyal 1995, Levy & Spiller 1996) also found that telecommunications sector policy is significantly affected by the political structure and influence of interest groups. The major factor that affects adoption of ICT in the hotel and tour operator business is the structure of the telecommunications sector, including the lack of competition and absence of an independent regulatory body. The issue here is that ICT adoption has been affected by politics.

"Technopolitics", which emerged in the history of technology, asserts how different competing individuals or groups try to impose and act out their political goals using artefacts (Winner 1980). Gagliardone (2014) in his recent research on the adoption of two large ICT projects, conducted ninety-two interviews with politicians, technocrats and other stakeholders, and argued that these projects are the extensions and means of cementing the political ideology of the government.

Telecommunications policy

Successive Ethiopian governments have kept major organisations under public ownership, including telecommunications, electricity, airlines, and shipping services. One of the main reasons for keeping these organisations under public ownership is that the profit generated from these organisations goes directly to the government treasury, giving the government the much needed money supply to support the budget of the government.

The telecommunications sector is structured with one service provider, owned and operated by the government. The telecommunications regulatory authority regulates the monopolistic operator. However, the regulatory authority lacks independence. Furthermore, in a monopolistic market structure the role of the regulatory authority is very limited; in a liberalised market structure, the main role

of a regulatory authority is to facilitate competition in the market. In a monopolistic market structure the role of the regulator is unclear and ineffective in creating competition. In addition, in Ethiopia, both the operator and the regulator report to the same minister's office.

In the case of Ethiopia, the government chose not to liberalise the telecommunications service. Recently a government official has stated that the telecommunications sector generates a large amount of revenue for the government treasury that is used for development projects (Maasho 2013); previously many government officials stated that the government was not ready to liberalise the sector (Laugh & Maasho 2013).

Monopolies

The monopolies in the telecoms and ICT sector restrict choice, they provide poor services with artificially inflated prices (Freedom House 2013). For example, during the first exploratory visit in 2009, the researcher noted that a broadband connection with 128 KB/s costs the equivalent of £250/month. The ITU (2012) has stated that the price of broadband in Ethiopia is the second most expensive in the world. The price of a computer was more than 16 months' average salary.

In a monopoly market structure, there are shortages; the service provider is unable to satisfy the demand. For example, the telecommunications operator in Ethiopia was unable to satisfy the demand for landlines and there were 18,580 potential customers on the waiting list (Figure 2-1). Furthermore, the telecoms operator struggled to maintain existing telephone lines; fault clearance takes weeks and sometimes months to resolve. The monopoly extends to the software and hardware suppliers of the hotel sector. CNET provides software for hoteliers to manage their hotels. CNET has a monopoly to supply this software to all hotels except for the international chain hotels. The software is now mandatory for hoteliers.

For small and medium hotels, affordability of such a system is important to continue trading. Furthermore, CNET upgrade the software regularly, and the upgrade price is increasing all the time. Hoteliers have no option but to upgrade, as CNET would not provide a maintenance service for their old software. In addition, the software connects the hotel directly to the Inland Revenue Office, where every sale is recorded on their system for VAT and taxation purposes. If the software system fails to connect to the Inland Revenue and if the software is not upgraded, then the hoteliers have to take full responsibility.

Petram Plc was the only cash register supplier to the hotel and tour operator business. Recently, seven more companies have been approved to supply and maintain hardware (ERCA 2012). These cash register machines are directly connected to the ERCA office. By law, only the supplier of the cash registers can do the maintenance with the approval of the ERCA.

In both cases, the software and hardware adoption by hoteliers and tour operators was facilitated as a result of government demand on hoteliers and tour operators. The policies forced hoteliers and tour operators to adopt software and hardware systems. Lack of competition in the sector makes it expensive for hoteliers, it is bureaucratic that for any fault ERCA needs to be informed and the maintenance approved by them.

Economic policy factors

According to the Ethiopian government, the Ethiopian economy has been growing in double digits for the last 7-8 years. However, others dispute this. For example, the IMF estimates the GDP growth rate to be in the range of 6-8%. This level of economic growth is impressive when compared to other countries. However, other economic indicators are showing little or no improvement; for example, the Human Development Index is the lowest in the world, and 50% of the population lives in

severe deprivation. Others have argued that the development is as a result of the investment from loans and aid rather than wealth creation (Birara 2012).

One of the tools that can provide an opportunity to improve people's lives is ICTs, but as part of its economic policy, the government imposes 40% tax on all imported ICT equipment. This makes ICTs unaffordable. Price plays a significant role in the adoption of ICT, and high price acts as a resistance factor for the adoption of ICT. Mokoya (2012) confirms this result, that the perception of high price by owners/managers restricts adoption.

Furthermore, the general economic situation, low GNI per capita, a high level of inflation (44% in 2008, 24% in 2012), and the devaluation of the currency by 50%, make ICTs very expensive. In 2009, the cost of 128 Kb/s broadband was 5,000 Birr (£250) per month. At the same time, according to the World Bank, the average yearly income of an individual was $1050. The above figure indicates that broadband is very expensive for small and micro hoteliers, and this acts as a resistance factor to adoption. This finding concurs with another study which showed that the price of ICT products and services plays a significant role in the adoption or rejection of ICT (Davis & Kanago 1998).

Adoption of ICT, in many cases, involves switching of old technology for new; for example, the word processor replaces pen and paper. Switching requires skills and knowledge to use the new technology effectively. The cost associated in changing from old to new technology is the switching cost. The switching cost should be affordable for the adopter for switching to occur. However, in the case of hotels in Addis Ababa, the switching cost is very expensive. Hence ICT has failed to be adopted by the hoteliers. Other studies have also shown similar results; for example, Shapiro and Varian (1999) showed that if the switching cost is too expensive then adoption would not take place.

Social policy factors

One of the essential requirements for effective use of ICT is the availability of skilled human resources. From Rogers' (2003) perspective, one of the factors that determines the diffusion of innovation is knowledge and awareness of the new innovation. This knowledge is divided into three categories. The first is the awareness of the innovation, followed by the 'how to' knowledge (the knowledge necessary to use the innovation properly), and the third is what is termed the principle knowledge; it is the knowledge about the functioning principles that underlie the innovation. For the adopter, 'how to' knowledge, to know how the innovation works, and how it is used, are the essential requirements to adopt an innovation.

The data indicate that there is a lack of skilled human resources in the sector, though there are two higher education institutions providing hospitality and tourism courses, the demand for skilled human resources outstrips the number of graduates from these institutions. There is notable growth of the hotel sector; 48% of the surveyed hoteliers were established between 1991 and 2005, indicating an increase in demand for skilled human resources in the sector.

When one considers the level of knowledge of the hotel and tour operator owners/managers, the data indicate that 45% of hoteliers had secondary education, while 43% of tour operators had an undergraduate degree. The data also show that 100% of tour operators adopt technology whereas only 35% of hoteliers adopt computers in their businesses. It seems that tour operators are greater adopters of ICT than hoteliers. The level of education seems to be one of the factors that affects the adoption of ICT in the two sectors. Rogers' (2003) diffusion of innovation theory indicates that knowledge and awareness of the innovation are major factors for adopters. A study by Mokaya (2012) of the adoption of ICT in small enterprises in Kenya showed similar results, that the level of education and knowledge had a significant effect on adoption. However, Raho

et al (1987) argued that educational commitment, the continued learning by potential adopters about new innovations, has a more significant effect on adoption.

In this research, the least adopted technologies, websites (12% adoption by hoteliers) and broadband (14% adoption by hoteliers), impose an exceptional knowledge demand on would-be adopters, resulting in few adopters. Whereas computers with 35% adoption impose a lower level of knowledge demand on would-be adopters resulting in a higher level of adoption. Other researchers also confirm these results, that the higher the level of knowledge demand, the less likely the technology will be adopted (Attewell 1992, Cohen & Levinthal 1990)

The study also attempted to find hotelier owners/managers' perception of their knowledge of ICT tools, including computers, broadband and website technologies. The majority of hotelier respondents (55%) do not have perceived knowledge of computers, similarly 60% and 62% or respondents do not have perceived knowledge of broadband and website technologies respectively. However, in the case of tour operators, almost all had some level of knowledge of computers, broadband, and website technology. The results indicate that both higher-level education and perception of knowledge of the technologies are factors for the adoption of ICT in the hotel and tour operator business.

The education levels of the genders vary, there is a gender divide. Though it is improving, there are deep-seated differences in gender enrolment at school. Families tend to send more boys to school than girls. In this study 19% of hoteliers were females and 81% were males. In the case of tour operator owners/managers 53% were male and 47% were females. Tour operator owners/managers travel with customers; data collection was conducted with deputy managers of the businesses, and most of them tended to be females, because of this the gender variation did not reflect the true picture for tour operators. The gender distribution in this sector of the economy shows gross underrepresentation of women in top

management, especially in decision making positions. In addition, the highest proportion of females work in labour intensive jobs with long hours and the lowest pay. According to the UNDP Gender Empowerment Measure (GEM) 2007/2008 report, one of the measures of inequality is the proportion of female legislators, senior officials and managers that occupy managerial and decision making senior posts; in Ethiopia females occupy 20% of total available positions (Wakins 2008). The results in this study are slightly lower than the UNDP figure. These gender disparities are not very different when compared to other sectors of the economy. The result is not very different when compared to other developing countries; the findings of other studies, as in Kenya (SUDA 2002), also show that these disparities are at the same level.

Technological factors

The data indicate that different technologies are adopted to varying degrees. For example, mobile phones have been adopted by all hoteliers and tour operators, whereas only 14.8% of hoteliers have adopted broadband and 12% have adopted website technology. The characteristics of the technology have a significant effect on adoption. Mobile phones are more widely adopted by hoteliers and tour operators than computers, broadband or website technologies. One of the factors for the adoption of mobile phones is their ease of use and usefulness for the adopter. This result has been confirmed by other research; for example, Davis et al (1989) show that perceived ease of use and perceived usefulness facilitates adoption. Furthermore, mobile phones tend to be more affordable compared to broadband or website technology.

The data also indicate that the adoption of broadband and e-mail were facilitated as a result of network externalities. The usefulness of technological artefacts such as broadband, mobile phones, and e-mail systems increases as the number of adopters increases. Other research also confirms this result; for example, Shapiro and Varian (1999) argue that the positive value created because of network

externalities facilitates adoption. Furthermore, research by Markus (1987) and Katz and Shapiro (1986) also confirm that network externalities facilitate adoption. The technology characteristics determine how it fits into society and consequently its adoption or rejection outcomes.

Legal factors

The lack of consumer protection law and absence of some level of legal protection for businesses that rent their premises from the government housing agency act as barriers to the adoption of ICT in the hotel business. The consumer protection law protects consumers from companies that engage in fraudulent or unfair practices.

Consumer protection law is more important for protecting consumers from unfair practices by companies that have monopoly power in the economy. In such situations consumers have no possibility of switching the product or service to another supplier. For example, Ethiopian telecommunications service provision to its customers can be categorised as an unfair practice. It takes weeks and months to fix a faulty telephone line, but the service provider demands line rental payment even when the line is faulty for a while. Consumers cannot challenge this kind of unfair behaviour from the service provider, if they do so, they can be disconnected altogether.

The lack of legal protection for people renting from the housing agency impacts on ICT investment. The housing agency can evict businesses any time it chooses. Furthermore, tenants are not allowed to make any alterations to the interior of the building including installation of sockets. This restriction, coupled with a lack of guarantee of how long they can rent the premises for, becomes a barrier for the adoption of ICT in these small and micro hotels.

8.7.5 International level factors

There are international level factors that affect the adoption of ICT. These factors arise from international organisations such as the IMF, WTO, and World Bank. These organisations provide soft loans and aid to many countries. In most cases these organisations provide funds with some level of policy prescription that the countries need to follow to access the fund. One of the recent examples is that Ethiopia is applying to be a member of WTO. WTO has requested a change of policy to liberalise the telecommunications and banking sectors in the country. Although the policy prescription has not been implemented in Ethiopia, it has put some level of pressure on the government. However, if there is going to be a policy change by the government as the result of this pressure, this will be seen in the future.

8.8 Conclusions

This chapter presents the discussion of the findings of the research. The study indicates that the adoption of ICTs in Ethiopia is low. The factors that affect the adoption of ICT arise from individual owner/manager characteristics, such as level of education and knowledge and awareness of ICT. The adopter owner/manager tends to be educated and had awareness and knowledge of the use of ICTs. The study confirms what had been argued by Rogers' theory of diffusion (1995). The organisational characteristics such as the size of the hotel, including its characteristics of its major customers, play an important role. Small hotels tend to lack financial and human resources to adopt ICTs, generally the smaller the hotel the more unlikely it is to adopt ICTs.

This study argues that the adoption of ICTs in the hotel and tour operator business was facilitated by factors arising from network externalities, the demand from their major customers and competition among these businesses. On the other hand, the resistance factors for the adoption of ICTs were the monopoly in the telecoms and ICT sectors, resulting in high prices. The high price of ICT products and

services has resulted in the non-adoption of ICTs in the sector. In addition, a 40% tax, a high level of inflation (24.1% in 2012) (IMF 2013) and a low level of GNI per capita restricts the adoption of ICTs in these businesses.

The study further links the findings to the theoretical framework. It argues that resistance to liberalise the sector arises from the political decision of the incumbent government. In addition, the economic policy of imposing 40% tax on ICTs impedes adoption. Furthermore, the absence of legal protection on tenancy agreements for small hotels hinders ICT adoption.

The adoption of ICTs is the result of the political, economic, social, technological and legal factors. The results of this study also confirm Rogers' diffusion of innovation theory, exemplified by the typical hotelier and tour operator as shown below in Figure 8-1.

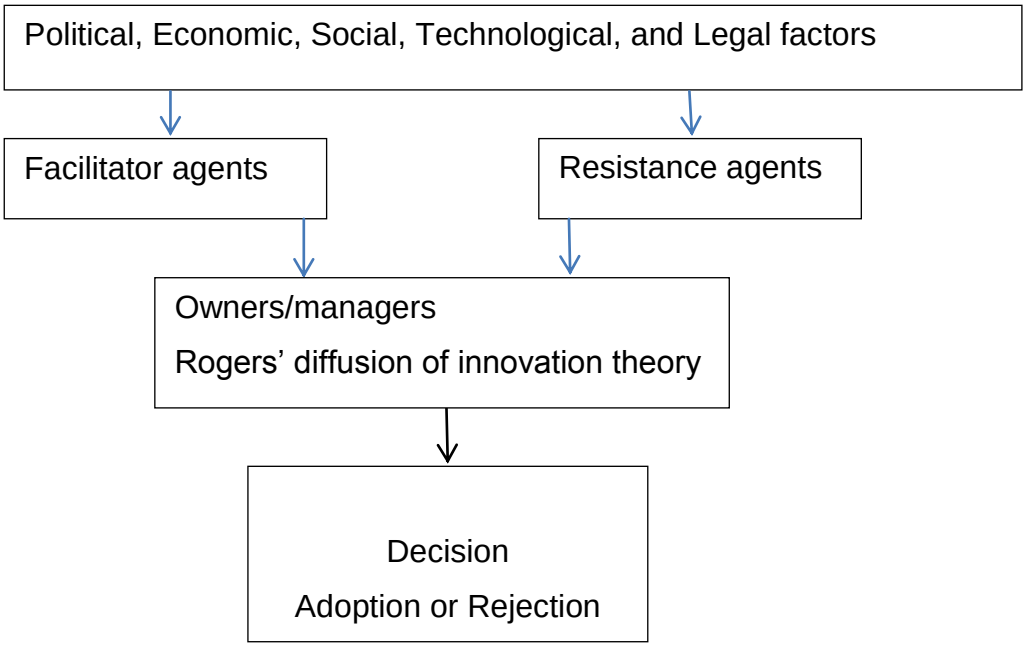

Figure 8-1 Factors affecting the adoption processes

Chapter 9 Conclusions

9.1 Introduction

In this thesis, various theoretical adoption of innovation frameworks have been discussed, and the interaction between society and technology explored. The importance of theory has been discussed, and the argument for research in discovering knowledge without a theoretical framework has been presented. Using theory to ground research helps to understand the underlying assumptions of the theory but also checks if the underlying context is fit and appropriate for the chosen theoretical assumptions. Furthermore, it focuses the research to investigate what are considered to be the important or detrimental factors presented by the theory.

In this particular research, Rogers' diffusion of innovation theory was selected to be appropriate but it is limited in the underlying assumptions in which the context of diffusion is happening. To enable the theory to describe the underlying assumption Rogers' theory was used as a basis to formulate the theoretical framework that includes the PESTL factors that influence the diffusion of ICT in Addis Ababa. The findings of the study also confirm the role of PESTL factors for the diffusion of innovation of ICT in the hotel and tour operator sector in Addis Ababa. The proposed modified Rogers' diffusion theory will help other researchers to use the method to explore how the theory has been adopted to the research context and so help other researchers to use it for the study of diffusion.

9.2 The findings and the main research questions

Although the findings were presented and discussed in Chapter 8 this section will focus on their implications for each research question. Data were collected from 144 hoteliers and 57 tour operators in Addis Ababa in two phases. In the first phase, 16 hoteliers that adopt ICT were interviewed. In the second phase a survey was conducted with128 hoteliers and 57 tour operators. Sample selection was not

random because of difficulties encountered before and during data collection. The problem encountered was lack of cooperation particularly by government owned hotels and organisations. Although this was a major setback, lessons learned from the process were published to highlight the problem and provide possible solutions (Demeke & Olden 2012); the paper is presented in Appendix E. The hotel business has a mix of adopters and non-adopters of ICTs, thus providing the opportunity to find the facilitator and resistance agents that affect the adoption process. Furthermore, these provide the opportunity to analyse the sources of these facilitator and resistance agents. The findings from this particular study may be extrapolated to similar contexts with the same socioeconomic conditions. Other researchers have corroborated the findings. Although these findings might be true, they are always dependent on future falsification tests.

9.2.1 What is the relationship between political, economic, and social factors and the adoption and use of ICTs by small hotels and tour operators in Addis Ababa?

The data analyses indicate that the factors that determine the adoption or rejection of ICT arise from the political, economic, social and technological conditions. For example, the major non-adoption factor is the lack of competition in the telecommunications and ICT sectors in the country. The political decision by the government not to liberalise the telecommunications sector has resulted in a single monopolistic operator; as a result, the operator has failed to satisfy the demand. Moreover, there is no competition in the sector, the incumbent operator's decision to charge high tariffs for telecommunications products and services makes them unaffordable for the majority of people.

The government has repeatedly stated that it is not ready to liberalise the telecommunications sector. However, reports from other organisations such as Freedom House and Open Org indicate that the main reason for not liberalising the market is to control the information flow in the country, freedom of information

does not exist in Ethiopia; to control the flow of information the government is able to use a nationwide filtering system to block opposition websites and blogs, including international organisations such as Amnesty International (Poetrato 2012, Freedom House 2013, Birara 2012). The use of Skype is punishable by 15 years' imprisonment (Moskvitch 2012).

Furthermore, the revenue generated from telecommunications products and services goes directly to government treasuries. As the demand for the government budget increases, so do the ways and means of generating more income for the government treasuries; for example the prices of telecoms services are kept artificially high to increase revenue (Freedom House 2013). The government has many reasons to keep the telecommunications sector under its control. Hence the policy originates from the political decision of the government.

The economic policy of the government has not helped to make ICT affordable. All ICT equipment in Ethiopia is imported; the 40% import tax imposed on all ICT equipment makes it unaffordable for the majority of the population. The price of a computer and cost of connecting to broadband are the most expensive in the world after the Central African Republic (Fields 2010).

The data analyses also indicate lack of understanding and knowledge on the use of ICT. The general low level of education and the gender gap act as facilitator resistance factors. This social issue impacts on the availability of the human resource for adopting and using ICT in the country. Other researchers have produced similar findings, that the level of education and awareness of innovation affect the diffusion of innovation (Rogers 2003, Mokaya 2012).

9.2.2 What are the factors that facilitate the adoption of ICT in hotel and associated businesses?

The data indicate that there are three main factors facilitating the adoption of ICT. The first is the effect of network externalities, which is created by the ubiquitous network characteristics. Positive values are generated by ICT as the number of users increases. Non-adopters are encouraged by the positive value created to adopt the technology. The results of this research indicate that hoteliers and tour-operators adopt ICT to benefit from the value created and be able to attract, communicate and secure business opportunities. Positive values are generated by the ICT use of foreign customers when they require services or products in the hotel or tour operator business. Many researchers have argued that the positive value gained by network externalities have influenced many to adopt the technology that generates these network externalities (Shapiro & Varian 1999, Katz & Shapiro 1986, Markus 1987).

The second factor for adoption is the demand from the major customers of hoteliers and tour operators. It is apparent from the data that one of the differences between adopters and non-adopters of ICT in the hotel sector relates to their customers. The major customers of hotels that adopt ICTs tend to be foreigners. These customers tend to use ICT in their social and professional life. For these customers, life without access to ICT, even for a few days when they are staying in these hotels, is not acceptable. Furthermore, as a result of change of geographical location, for many customers of these hotels there is a need to communicate with their families, friends and co-workers, to inform them about their wellbeing and their new experiences. Unavailability of the Internet in the hotel would not be tolerated by many customers, hence this demand forces hoteliers to adopt ICT in their businesses. Other researchers have confirmed this finding (Lefebvre & Lefebvre 1996, DiMaggio & Powell 1983, Hill 1994, Mehrtens et al. 2001).

Poor and unreliable infrastructure is a major factor for non-adoption of ICT in developing countries (Chisenga 1999). The monopolistic telecoms operator has failed to satisfy the demand and existing infrastructures are poorly maintained and unreliable. In addition, connection to the Internet needs to be available at all times in the hotels; if not, customers will check-out and move to the next hotel with Internet access. Hoteliers have to be innovative to make sure that the Internet is available at all times. To keep their Internet connections available at all times, hoteliers maintain their telecommunications lines themselves, as one of the interviewees stated: “when the telephone line starts making a cracking noise, it means the manhole is filling up with water, staff will pump the water out from the manhole.” Organisations faced with poor infrastructure attempt to find solutions using innovative methods (Karanasios & Burgess 2008).

The third main factor is the competition among hoteliers and tour operators. The growing numbers of hoteliers compete to attract the limited number of foreign customers; for example, hoteliers provide free Wi-Fi and free local and national calls, although it is expensive. Furthermore, the competition among hoteliers tends to facilitate the adoption of ICT in these businesses.

9.2.3 What are the resistance factors for the adoption of ICT in the hotel and associated businesses?

The resistance factors that act as a barrier for the adoption of ICT arise from the political, economic, and social policies followed by the government. There are technological characteristics of ICT that act as a barrier for the adoption of ICT in the sector. The monopolistic structure of the telecommunications sector is a significant factor for the non-adoption of ICT. The incumbent telecoms provider is failing to satisfy demand. There is no competition in the sector, hence the operator charges artificially inflated prices, with poor services, and this acts as an adoption resistance factor.

Non-affordability of products and services for the majority of hoteliers has a significant negative affect on the adoption of ICT (ITU 2013). The economic policy of 40% import tax, a high level of inflation and a low level of GNI per capita also negatively affect ICT adoption. Furthermore, knowledge and awareness of an innovation are a primary requirement for adoption (Rogers 2003, Mokaya 2012). Lack of knowledge arising from the education system, compounded by gender discrimination of women (fewer girls enrolled in schools) impose further restrictions on the adoption of ICT. These social factors impede adoption.

In the case of technological barriers, some technologies impose a high level of knowledge demand on would-be adopters. For example, setting up and maintaining a website require a high level of knowledge in adopters. Hoteliers and tour operators lack the knowledge required to create and maintain websites and this acts as a resistance factor for adoption.

Organisational level factors such as being small in size impede adoption. Small-sized organisations tend to lack resources and technical know-how. The data indicate that many of the small hoteliers are not adopters of ICT. Many of the reasons are lack of knowledge, finance, and absence of demand for the technology from their customers. Other researchers confirm the correlation between size of the organisation and adoption of technology; the smaller the size the less likely it is to adopt technology (Damanpour 1992, Palvia et al. 1994).

There are legal factors that impose further restrictions on small hotels. Small hotels tend to rent their business premises from the government housing agency. The housing agency can give two weeks' notice to evict tenants; this lack of guarantee of length of stay discourages hoteliers from investing in ICTs, so the lack of legal protection becomes a barrier to adoption.

The individual level factors that affect adoption tend to originate from a lack of commitment to continuous education, lack of exposure to technology and lack of

finance. The results from this research indicate that owners/managers of hotels and tour operators with high levels of education tend to be adopters of ICT in their businesses. Other researchers have found similar results (Rogers 2003, Kiplang'at & Ocholla 2005, Greenhalgh et al. 2004).

9.2.4 What ICT tools are critical for hotels and tour operators?

The two most critical systems for hotelier and tour operator businesses are their e-mail and Wi-Fi connections. The e-mail system is the major means of communication with their customers. Hoteliers and tour operators regularly receive booking, pricing and availability requests from their customers. When there is no e-mail access in their offices they use Internet cafes to make sure that customers' requests are dealt with regularly and promptly.

Hoteliers have to provide Wi-Fi access to their customers at all times. Interruption of Wi-Fi systems in the hotel would result in customers checking-out and moving to other hotels that provide Wi-Fi. Hoteliers pro-actively try to maintain their Wi-Fi connection. There were growing frustrations among hoteliers about Wi-Fi interruptions, and it can take weeks before the telecoms operator restores the service. Hotel owners/managers would constantly contact the telecoms operator for quick resolution of faulty lines.

9.2.5 What are the main uses for ICT in the hotel and associated businesses?

In the majority of the hotels and tour operators the use of ICTs is very basic. The applications include word-processing, spreadsheets and accounting software. The online booking system is critical for hotels and tour operators to attract customers. Schmidt et al (2008) argued that the interactivity of a website increases its effectiveness for a business. However, very few hotels have online booking or

payment services on their websites. In most cases, the website is used as an advertising tool.

9.2.6 What are the effects of national policies on ICT diffusion in the hotel and associated businesses?

The Ethiopian telecom proclamation no 49/1996 (ETA 2004) affirms the telecommunications monopoly policy. This policy restricts competition in the telecommunications sector resulting in a single telecommunications operator. The monopoly telecommunications operator has failed to satisfy the demand in the country. This coupled with prices of telecoms services that are kept artificially high to increase government revenue are resistance factors for the adoption of ICTs (Freedom House 2013).

The economic policy of the government to impose 40% import tax acts as a resistance factor for the adoption of ICTs. In addition, the low level of GNI per capita and high inflation make ICTs unaffordable for the majority of the population, as reflected in the ITU report (ITU 2013). The non-adoption of ICT in the hotel and tour operator business is also caused by this factor.

The education policy in the country does not satisfy the skilled human resource demanded by the hotel and tour operator business. In addition, the gender gap in the sector is a reflection of the social and cultural characteristics of the society.

The government encourages investors in the hotel and tour operator sector; this policy has increased the number of hotels and tour operators in the country. The increase in these hotels and tour operators creates more competition in the sector and facilitates the adoption of ICTs in the sector.

9.3 Research contribution

At the beginning of the research, the ICT diffusion problem in Ethiopia was identified, and the factors and the context for the non-adoption of ICT were explored. The diffusion of ICT in Tanzania and Kenya was compared with that of Ethiopia. The data from ITU clearly demonstrated that diffusion of ICT in Ethiopia is lagging behind those countries. One of the main research contributions is the identification of these factors that facilitate or create barriers for the adoption of ICTs in the hotel and tour operator business.

The thesis presents how the owners/managers of these businesses have been influenced by the resultant effect of facilitator and resistance factors. Adoption of ICTs, depending on the technology adopted, is based on the individual adopter, knowledge and awareness of the technology, access to finance, the overall availability of ICT technology, and the level and demand from their major customers; these are some of the factors that influence the adoption process.

In a developing country like Ethiopia, its policies are affected by many sources including international organisations. At the national level, political, economic, social and technological contexts inform the individual's ability to participate in the adoption or rejection of ICTs in the selected sector of the economy. The results of this research might be extrapolated to other sectors of the economy and also to other countries with similar contexts.

The researcher developed a theoretical framework to explain the adoption and rejection of ICTs based on Rogers' diffusion of innovation theory. The fundamental argument is that adoption of innovation is a complex process affected by the macro context of the country. Rogers argued that it is the individual and the social setting that affect the adoption of innovation diffusion. This is true as confirmed by many researchers. However, the individual adopter has been greatly affected by the policies of the government. One of the findings indicates that the reason for not

liberalising the telecommunications sector is a political decision. These policies are extensions of the political agenda of the ruling party, to be in control of the communications systems and to generate revenue for the government.

9.4 Further development and research opportunity

Further investigations and research opportunity identified on the adoption of ICT in the developing countries in two strands. The role of international organisations in advocating and prescribing policy change in various sectors has been a source of much discussion. For countries that rely on international organisations for funding of projects there is some level of policy prescription on the recipient countries. In most of the cases, these countries tend to be developing countries.

On the other hand, national level factors also affect the adoption of ICT in various sectors of the economy. For example, the political decision on policy issues can impact on the adoption of ICT, or similarly, the economic, social, cultural, environmental, technological or legal conditions can affect the adoption of ICT. Each of these areas provides an opportunity to research the effect on adoption. The two areas identified for further development and research are:

1. International factors that affect diffusion in developing countries;
2. National level factors that facilitate or hinder the adoption of ICT in different sectors of the economy.

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Appendix A : Level of ICT adoption by Hoteliers and Tour operators								
ICT	Hoteliers				Tour operators			
	Adoption		**non-adoption**		**Adoption**		**Non-adoption**	
adoption and non-adoption	35%		64%		100%		0%	
Computer	Major reasons	Minor reasons	Major reasons	Minor reasons	Major reasons	Minor reasons	Major reasons	Minor reasons
	Efficiency	Customers demand	No advantages\usefulness		Essential	Efficiency		
	Use for Finance	Communication	Future plan		Efficiency	Communication		
	Data storage	Management	Not required\ no demand		Communication	Essential		
	Modernise	convenient	Lack of Finance		Data storage	Data storage		
	Customers demand	competitive	No customer demand			usefulness		
	Essential		lack of knowledge\awareness			Finance		
			Problem with business premises			Competition		
			small size			Modernity		
						Marketing		

ICT	Hoteliers				Tour operators			
	Adoption		**non-adoption**		**Adoption**		**Non-adoption**	
Broadband adoption and non-adoption rate	14%		85%		98%		2%	
	Major reasons	Minor reasons	Major reasons	Minor reasons	Major reasons	Minor reasons	Major reasons	Minor reasons
Broadband	Customers demand	Competitiveness	Lack of advantages or usefulness		Communication	Usefulness		
	Information seeking	Finance	Plan for future		Essential	Used for Education		
	Modernity		Not required\ no demand		Information seeking	Competitive advantages		
	Communication		Lack of finance		Marketing			
			No customers demand		Usefulness			
			Lack of knowledge and awareness					
			Problem with businesses premises					
			Size of the organisations					

ICT	Hoteliers				Tour operators			
	Adoption		**non-adoption**		**Adoption**		**Non-adoption**	
Website adoption and non-adoption rate	12%		87%		93%		7%	
	Major reasons	Minor reasons	Major reasons	Minor reasons	Major reasons	Minor reasons	Major reasons	Minor reasons
	Marketing		No advantage		Marketing	Marketing		
	Plan to adopt		Not useful		Communication	Communication		
	Information providing		Lack of Knowledge		Information Providing	Information providing		
			Plan to adopt		Usefulness	Essential		
			Lack of Knowledge		Essential	Efficiency		
			Lack of finance			Usefulness		
			Lack of awareness					
			Size					
			Absence of customers demand					
			Business premises					

Appendix B Diffusion of Internet source ITU (ITU 2001)

Table 9-1 Pervasiveness of the Internet

Level 0 *Non-existent*:	The Internet does not exist in a viable form in this country. No computers with international IP connections are located within the country. There may be some Internet users in the country; however, they obtain a connection via an international telephone call to a foreign ISP.
Level 1 *Embryonic*:	The ratio of users per capita is in the order of magnitude of less than one in a thousand (less than 0.1%).
Level 2 *Established*:	The ratio of Internet users per capita is in the order of magnitude of at least one in a thousand (0.1% or greater).
Level 3 *Common*:	The ratio of Internet users per capita is in the order of magnitude of at least one in a hundred (1% or greater).
Level 4 *Pervasive*:	The Internet is pervasive. The ratio of Internet users per capita is in the order of magnitude of at least one in ten (10% or greater).

Table 9-2 Geographical dispersion

Level 0 *Non-existent*:	The Internet does not exist in a viable form in this country. No computers with International IP connections are located within the country. A country may be using UUCP connections for e-mail and USENET.
Level 1 *Single location*:	Internet points-of-presence are confined to one major population centre.
Level 2 *Moderately dispersed:*	Internet points-of-presence are located in multiple first-tier political subdivisions of the country.
Level 3	Internet points-of-presence are located in at least

Highly Dispersed:	50% of first-tier political subdivisions of the country.
Level 4 *Nationwide*:	Internet points-of-presence are located in essentially all first-tier political subdivisions of the country. Rural access is publicly and commonly available.

Table 9-3 Subsectors of the social structure

Sector	Subsectors
Academic	Primary and secondary education University education
Commercial	Distribution Retail Finance Service Manufacturing
Health	Hospitals Research centres Clinics Physicians/practitioners
Public	Central government Regional and local governments Public companies Military

Table 9-4 Sectoral absorption

Sector	Rare	Moderate	Common
Academic -primary and secondary schools, universities	<10% have leased line Internet connectivity	10-90% have leased line Internet connectivity	>90% have leased line Internet connectivity
Commercial -	<10% have	10-90% have	>90% have

businesses with more than 100 employees	Internet servers	Internet servers	Internet servers
Health -hospitals and clinics	<10% have leased line Internet connectivity	10-90% have leased line Internet connectivity	>90% have leased line Internet connectivity
Public - top and second tier government entities	<10% have Internet servers	10-90% have Internet servers	>90% have Internet servers

Table 9-5 Sectoral absorption rating

Sectoral point total	Absorption dimension rating	
0	Level 0	Non existent
1-4	Level 1	Rare
5-7	Level 2	Moderate
8-9	Level 3	Common
10-12	Level 4	Widely used

Table 9-6 Connectivity infrastructure

	Domestic backbone	International links	International exchanges	Access methods
Level 0	None	None	None	None
Level 1	<E-1	≤128 Mbps	None	Modem
Level 2	T-3−OC-4	T-1−T-3	1	Modem 64 Kbps leased lines
Level 3	OC-4−100 Gbps	T-3–10 Gbps	More than 1; Bilateral or open	Modem 64 Kbps

				leased lines
Level 4	≥100 Gbps	≥10 Gbps	Many; Bilateral and open	<90% modem >64 Kbps

Table 9-7 Organisational infrastructure

Level 0 *None:*	The Internet is not present in this country.
Level 1 *Single:*	A single ISP has a monopoly in the Internet service provision market. This ISP is generally owned or significantly controlled by the government.
Level 2 *Controlled:*	There are only a few ISPs because the market is closely controlled through the maintenance of high barriers to entry. All ISPs connect to the international Internet through a monopoly telecommunications service provider. The provision of domestic infrastructure is also a monopoly.
Level 3 *Competitive:*	The Internet market is competitive and there are many ISPs due to the existence of low barriers to market entry. The provision of international links is a monopoly, but the provision of domestic infrastructure is open to competition.
Level 4 *Robust:*	There is a rich service provision infrastructure. There are many ISPs and low barriers to market entry. The provision of international links and domestic infrastructure is open to competition. There are collaborative organizations and arrangements such as public exchanges, industry associations, and emergency response teams.

Table 9-8 Sophistication of use

Level 0 *None:*	The Internet is not used, except by a very small fraction of the population that logs into foreign services.
Level 1 *Minimal:*	The small user community struggles to employ the

	Internet in conventional, mainstream applications.
Level 2 *Conventional:*	The user community changes established practices somewhat in response to or in order to accommodate the technology, but few established processes are changed dramatically. The Internet is used as a substitute or straight-forward enhancement for an existing process (e.g., e-mail vs. post). This is the first level at which we can say that the Internet has "taken hold" in a country.
Level 3 *Transforming:*	The user community's use of the Internet results in new applications, or significant changes in existing processes and practices, although these innovations may not necessarily stretch the boundaries of the technology's capabilities.
Level 4 *Innovating:*	The user community is discriminating and highly demanding. The user community is regularly applying, or seeking to apply the Internet in innovative ways that push the capabilities of the technology. The user community plays a significant role in driving the state-of-the-art and has a mutually beneficial and synergistic relationship with developers.

Appendix C Letter seeking cooperation from hoteliers and tour operators

Thames Valley University
St Mary's Road
Ealing
London W5 5RF
United Kingdom

26th March 2009

To whom it may concern:

Mr Wegene Demeke

Mr Wegene Demeke is a staff member of Thames Valley University. Mr Demeke is conducting research on a part-time basis for his PhD thesis. His topic is:

"Small and Micro Business Enterprises in Addis Ababa, Ethiopia: Development and Poverty Reduction through Information and Communication Technologies"

I would be obliged if you would give Mr Demeke any assistance he may need with his research.

Tony Olden

Dr Anthony Olden
Senior Lecturer

tony.olden@tvu.ac.uk

Appendix D Phase 1 Interview questions for hoteliers (English)

Questionnaire for owners/managers of hotels in Addis Ababa

Establishment Name:
Position:
Date: Time:

Section 1 Demographic data

Q1) Gender

1. Male
2. Female

Q2) Indicate the highest level of your education

1. Elementary
2. Secondary
3. Vocational education
4. Bachelor
5. Master or above

Q3) How many years of hotel management experience do you have?

1. Less than one year
2. 1-3 years
3. 4-5 years
4. 6-10 years
5. More than 10 years

Section 2 Hotel information

Q4) Is the Hotel family owned?

1. Yes
2. No

Q5) What is the star classification of your Hotel?

Q6) How many staff do you have?

1. <10
2. 11-25
3. 26-50
4. 51-75
5. 76-100
6. Above 100

Q7) How easy is it to find the regulations and rules that govern the establishment of a hotel business?

Q8) What are the main opportunities of a hotel business?

Q9) What are the main challenges of the hotel business?

Section 3 Adopted ICT tools and usage in the hotel

Q10) Who supplies ICT for the hotel sector?

Q11) What are the roles of stakeholders in the ICT adoption in the sector?

Q12) State the number of ICT tools in the hotel

	None	1-3	4-6	Above 7	Not sure
Telephone (land line)					
Fax					
Mobile phone					
Computer					
Laptop					
Server					
Internet Hub					
Wireless system					

Q13) Do you have a website?

1. ☐ Yes
2. ☐ No

Q14) Does your website have on-line booking?

Q15) How often do you update your website?

Q16) Do you have Internet access in your hotel?

1. ☐ yes
2. ☐ No

Q17) Do you charge for the use of the Internet?

1. ☐ yes
2. ☐ no

Q18) Are you satisfied with Internet services?

Q19) What method do your customers use to book in your hotel?

Q20) What are the major issues that affect the use of ICT in the hotel?

Q21) How do you describe your customers?

Q22) Describe how ICTs are used in your hotel?

Q23) Tell me about the use of e-mail in your hotel?

Section 4 ICTs' use and support from stakeholders

Q24) Are you aware of any government organisations that facilitate the use of ICT?

Q25) Are there any trade associations who are providing support on ICT issues?

Q26) What are the main advantages of the use of ICTs in your hotel?

Thank you for your participation!

Appendix E Phase 1 Interview questions for owners/managers of hotels (Amharic)

የሆቴል፡ ባለቤቶች/ አስተዳዳሪዎች ፡ መጠይቅ ፡ቅጽ፡በ አዲስ አበባ

ክፍል ፩

፩. ጾታ

ሀ. ወንድ

ለ. ሴት

2. ከፍተኛውን፡ የትምህርት፡ ደረጃዎን ይምረጡ

ሀ. አንደኛ፡ ደረጃ

ለ. ሁለተኛ፡ደረጃ

ሐ. የሙያ፡ትምህርት

መ. የመጀመሪያ ድግሪ

ሰ. ድህረ፡ምረቃ፡ ወይም፡ ከዛ፡ በላይ

3. ስንት፡አመት፡ የሆቴል፡ አስተዳደር፡ ልምድ፡ አለዎት

ሀ. ከአንድ፡ አመት፡ በታች

ለ. ፩-3 አመት

ሐ. 4-5 አመት

መ. 6-10 አመት

ሰ. ከ ፲0 አመት፡ በላይ

ክፍል 2፣ የሆቴል፡ መረጃ

---

4. ሆቴሉ፡ የግለሰብ፡ ነው፡ ወይ

ሀ. አዎ

ለ. አይደለም

5. የሆቴሉ፡ ማእረግ፡ (ምደባ)፡ ስንት፡ ነው

6. ስንት፡ ሰራተኛ፡ አላችሁ

ሀ. 10 እና፡ ከዛ፡ በታች

ለ. 11-25

ሐ. 26-50

መ. 51-75

ሰ. 76-100

ረ. ከመቶ፡ በላይ

7. ሆቴል: ለማቋቋም: የሚያስፈልጉ: መረጃዎችን: ከየት: ነዉ: ማግኘት: የሚቻለው?

8. የሆቴል፡ ሰራ፡ ወንኛዉ፡ የሚሰገኛቸዉ፡ እድሎች፡ ምንድን፡ ናቸዉ

9. የሆቴል፡ ሰራ፡ አስቸጋሪ፡ የሆኑት፡ ሁኔታዎች፡ ምንድን፡ ናቸዉ

ክፍል 3 የመረጃና፡የመገናኛ፡ቴክኖሎጅ፡ ሁኔታ

10. የ የመረጃና፡የመገናኛ፡ ቴክኖሎጅ: አቅራቢ: ማነው?

11. የመረጃና፡የመገናኛ፡ ቴክኖሎጅ: ዋና:ባለ:ጉዳዮች: በስርጭቱ:ላይ ያላቸው:አስተዋጽኦ: እንዴት:ነው

12. ስንት፡ የመረጃና፡የመገናኛ፡ ቴክኖሎጅ፡ በ ሆቴል፡ ውስጥ፡ አለ

	ምንም የለም	1-3	4-6	7 እና ከዛ: በላይ	አላዉቅም
ስለክ					
ፋክስ					
ሞባይል					
ኮምፒዩተር					
ላፕቶፕ					

ሰርቨረ					
ኢንተርኔት ሀብ					
ወአየእርለስ ሲስተም					

13. ሆቴሉ፡ ድህረ፡ ገጽ አለዉ፡ ወይ፡

ሀ. አዎ አለዉ

ለ. የለዉም

14. ድህረ፡ ገጹ፡ የ እንግዳ፡ መቀበያ፡ አለዉ፡ ወይ

15. ድህረ፡ ገጹ፡ በስንት ጊዜ ነዉ የሚስተካከለዉ(update)

16. በ ሆቴል ፡ዉስጥ፡ ኢንተርኔት፡ አለ፡ ወይ

ሀ. አዎ አለ፣ ለምን አስገቡ

ለ. የለም

17. ለኢንተርኔት፡ ታስከፍላላችሁ ወይ፣

ሀ. አዎ

ለ . አይደለም፣

18. እባክዎን፡ ስለ፡ ኢንተርኔት፡ አገልግሎት፡ ሀሳብዎን፡ ይስጡ

19. እባክዎን እንግዶች ሆቴል የሚይዙት በየትኛዉ መንገድ ነዉ

20. የመረጃና ፡የመገናኛ፡ ቴክኖሎጂ ን በሆቴሉ ላይ ያለዉ እድምታ ምንድን ነዉ

21. ስለ:ደንበኟዎችዎ: ያብራሩልን?

22. የመረጃና :የመገናኛ፡ ቴክኖሎጂ አጠቃቀምዎን : ሁኔታ ያብራሩልን?

23. በ ሆቴል:ውስጥ: ስለ: ኢሜል: አጠቃቀም: ይግለጹልን:

ክፍል 4 የ የመረጃና :የመገናኛ፡ ቴክኖሎጂ ግዢ፤ አጠቃቀም እና የመመረያ ጉዳዮች ለ ሆቴል ንግድ

24. የመረጃና :የመገናኛ፡ ቴክኖሎጂ ን አጠቃቀም፣ መገኘት የሚያግዙ የሚያዉቁት የመንግስት መስሪያ ቤት አለ ወይ

25. የሆቴሎች ማህበር አለ ወይ፣ ካለ ለ የመረጃና :የመገናኛ፡ ቴክኖሎጂ ድጋፍ ያደርጋል ወይ

26. የመረጃና :የመገናኛ፡ ቴክኖሎጂ ጥቅም: ይግለጹ?

Appendix F Phase 2 ***Questionnaire for Hotel Owners/managers (Amharic)***

የሆቴል፡ ባለቤቶች/ አስተዳዳሪዎች ፡ መጠይቅ ፡ቅጽ፡በ አዲስ አበባ

ክፍል 1

1. ጾታ
   - ሀ. ወንድ
   - ለ. ሴት
2. እድሜ
   - ሀ. ከ 20 በታች
   - ለ. 21-30
   - ሐ. 31-40
   - መ. 41-50
   - ሰ. 51-60
   - ረ. ከ 60 በላይ
3. እባክዎን፡ ከፍተኛውን፡ የትምህርት፡ ደረጃዎን፡ይምረጡ
   - ሀ. ማንበብና፡መሠፍ፡ የማይችሉ፡
   - ለ. ማንበብና፡መሠፍ፡ የሚይችሉ፡
   - ሐ. አንደኛ፡ ደረጃ
   - መ. ሁለተኛ፡ደረጃ
   - ሰ. የሙያ፡ትምህርት
   - ረ. የመጀመሪያ ድግሪ
   - ሰ. ድህረ፡ምረቃ፡ ወይም፡ ከዛ፡ በላይ
4. የሆቴል፡ ትምህርት ፡ አለዎት
   - ሀ. አለኝ
   - ለ. የለኝም
5. ስንት፡አመት፡ የሆቴል፡ አስተዳደር፡ ልምድ፡ አለዎት
   - ሀ. ከአንድ፡ አመት፡ በታች
   - ለ. 1-3 አመት
   - ሐ. 4-5 አመት

መ. 6-10 አመት
ሰ. ከ 10 አመት፡ በላይ

ክፍል 2፣ የሆቴል፡ መረጃ

6. ሆቴሉ፡ መቼ፡ ነው፡ የተመሰረተው

.....

7. የሆቴሉ፡ ማእረግ፡ (ኮከብ)፡ ስንት፡ ነው

ሀ. የለውም
ለ. አንድ
ሐ. ሁለት
መ. ሶስት
ስ. አራት እና፡ ከዛ፡ በላይ

8. ስንት፡ ቃሚ፡ ሰራተኛ፡ አላችሁ
ሀ. ከ 10 ሰራተኛ፡ በታች
ለ. 10-25
ሐ. 26-50
መ. 51-75
ሰ. 76-100
ረ. መቶ፡ እና ከዛ፡ በላይ

9. ሆቴሉ፡ ስንት፡ የመኝታ፡ ክፍሎች፡ አሉት

ሀ. 15 እና፡ ከዛ፡ በታች
ለ. 16-50
ሐ. 51-75
መ. 76-100
ሰ. መቶ፡ እና፡ ከዛ፡ በላይ

ክፍል 3 የመረጃና፡የመገናኛ፡ቴክኖሎጅ፡ እወቀትና፡ ግንዛቤ

10. ስለ፡ ኮምፒዩተር፡ የሚያዉቁትን፡ እዉቀት፡ ያገኙት፡ እንዴት፡ ነው
ሀ. አላዉቅም
ለ. ተመሳሳይ፡ ሆቴል፡ካላቸዉ፡ ግለሰቦች
ሐ. ከራዲዮ፡እና፡ ከቴሌቭዥን

መ. እራሴን፡ በማስተማር
ሰ. ከመሥሐፍት
ረ. ከሌላ፡ ምንጭ

11.ስለ፡ ኢንተርነት፡ የሚያዉቁትን፡ እዉቀት፡ ያገኙት፡ እንዴት፡ ነው
ሀ. አላዉቅም
ለ. ተመሳሳይ፡ ሆቴል፡ካላቸዉ፡ ግለሰቦች
ሐ. ከራዲዮ፡እና፡ ከቴሌቭዥን
መ. እራሴን፡ በማስተማር
ሰ. ከመሥሐፍት
ረ. ከሌላ፡ ምንጭ

12.ስለ፡ ዌብሳይት፡ የሚያዉቁትን፡ እዉቀት፡ ያገኙት፡ እንዴት፡ ነው
ሀ. አላዉቅም
ለ. ተመሳሳይ፡ ሆቴል፡ካላቸዉ፡ ግለሰቦች
ሐ. ከራዲዮ፡እና፡ ከቴሌቭዥን
መ. እራሴን፡ በማስተማር
ሰ. ከመሥሐፍት
ረ. ከሌላ፡ ምንጭ

ክፍል 4 የመረጃና፡የመገናኛ፡ቴክኖሎጅ፡ ሁኔታ

13. ሞባይል፡ ለሆቴል፡ ስራ፤ ይጠቀማሉ ፡ ወይ

ሀ. አዎ
ለ. አልጠቀምም
ሐ. የለኝም

14. ኮምፒዩተር፡ በሆቴል፡ ውስጥ፡ አለ ወይ

ሀ. አለ
ለ. የለም ወደ፡ ቁጥር፡ 19 ያምሩ
ሐ. አላዉቅም ወደ፡ ቁጥር፡ 19 ያምሩ

15. ምን ያህል ነዉ ለሚቀጥሉት የሆቴል አገልግሎት በኮምፒዩተር የሚጠቀሙት

	በጣም ብዙ ጊዜ	ብዙ ጊዜ	አንዳንድ ጊዜ	አንጠቀምም	አላዉቅም
Front office					
ሂሳብ፡ አያያዝ					
Marketing					
Human Resource					
ግዢ					
ክፍያ					
ባነክ					
Word processing					
Spread sheet					
Database					
ሌሎች					

16. እባክወን የሚከተሉት ሶፈትዌሮች በሆቴሉ ላይ ያለዉን እንደምታ ይንገሩን

	በጣም	መጠነኛ	ምንም	አላዉቅም

	ትልቅ ተጽእኖ	ነዉ	የለዉም	
ኢሜል				
Word processing				
Spreadsheet				
Publishing				
ሒሳብ አያያዝ ና ገንዘብ				
ሆቴል አስተዳደር				
ግዢ				
ሌሎች				

17. ኮምፒዩተር ፡ ለማስገባት፡ ያሳመነዎት፡ ዋናዉ፡ ምክንያት፡ ምንድን፡ ነዉ ……

18. ኮምፒዩተር ፡ ለማስገባት፡ ያሳመነዎት፡ሌሎች፡ ምክንያቶችስ፡ ምንድን፡ ናቸዉ

……
……
……

19. ኮምፒዩተር ፡ ላለማስገባት፡ ያሳመነዎት፡ ዋናዉ፡ ምክንያት፡ ምንድን፡ ነዉ……

20. ኮምፒዩተር ፡ ላለማስገባት፡ ያሳመነዎት፡ሌሎች፡ ምክንያቶችስ፡ ምንድን፡ ናቸዉ
……
……

……

21. ኢንተርኔት፡ በሆቴል፡ ዉስጥ፡ አለ፡ ወይ

ሀ. አለ
ለ. የለም ወደ፡ ቁጥር፡ 25 ያምሩ
ሐ. አላዉቅም ወደ፡ ቁጥር፡ 25 ያምሩ

22. ለኢንተርኔት፡ ታስከፍላላችሁ ወይ፣

ሀ. አዎ ስንት ነዉ፤ የምታስከፍሉት ……
ለ . አይደለም፣ ለምን አታስከፍሉም

……
……

23. ኢንተርኔት ፡ ለማስገባት፡ ያሳመነዎት፡ ዋናዉ፡ ምክንያት፡ ምንድን፡ ነዉ ……

24. ኢንተርኔት ፡ ለማስገባት፡ ያሳመነዎት፡ሌሎች፡ ምክንያቶችስ፡ ምንድን፡ ናቸዉ

……
……
……

25. ኢንተርኔት ፡ ላለማስገባት፡ ያሳመነዎት፡ ዋናዉ፡ ምክንያት፡ ምንድን፡ ነዉ……

26. ኢንተርኔት ፡ ላለማስገባት፡ ያሳመነዎት፡ሌሎች፡ ምክንያቶችስ፡ ምንድን፡ ናቸዉ

……
……
……

27. ድህረ፡ገ ፡ በሆቴል፡ ዉስጥ፡ አለ፡ ወይ

ሀ. አለ
ለ. የለም ወደ፡ ቁጥር፡ 26 ያምሩ
ሐ. አላዉቅም

28. ድህረ፡ ገሰ ፡ ለማስገባት፡ ያሳመነዎት፡ ዋናዉ፡ ምክንያት፡ ምንድን፡ ነዉ ……

29. ድህረ፡ ገሰ ፡ ለማስገባት፡ ያሳመነዎት፡ሌሎች፡ ምክንያቶችስ፡ ምንድን፡ ናቸዉ

……
……
……

30. ድህረ፡ ገሰ ፡
ላለማስገባት፡ ያሳመነዎት፡ ዋናዉ፡ ምክንያት፡ ምንድን፡ ነዉ……

31. ድህረ፡ ገሰ ፡
ላለማስገባት፡ ያሳመነዎት፡ሌሎች፡ ምክንያቶችስ፡ ምንድን፡ ናቸዉ
……
……
……

32. ድህረ፡ ገጹ፡
የእንግዳ፡ መቀበያ፡ አለዉ፡ ወይ(online reservation)

ሀ. አዎ አለዉ
ለ. የለዉም
ሐ. አላዉቅም ምን አይነት ችግር፡ ገጠመዎት
……
……
……
33. ድህረ፡ ገጹ፡ በስንት
ጊዜ ነዉ የሚስተካከለዉ(update)

ሀ. በየቀኑ
ለ. በየሳምንቱ
ሐ. በየወሩ
መ. በየሶስት ወር
ሠ. በየስድስት ወር
ረ. ተደርጎ፡አያዉቅም

……
34. እባክዎን እንግዶች
ሆቴል የሚይዙት በየትኛዉ መንገድ ነዉ

	በጣም ብዙ ጊዜ	ብዙ ጊዜ	አንዳንድ ጊዜ	አያደርጉም
በግንባር				

በስልክ				
በፋክስ				
በኢሜል				
ማአከላዊ ሆቴል መያዣ አገልግሎት				
የጉዞ ወኪል				

ክፍል 5 የመረጃ ጥማት፤ ፍላጎት፤አደረጃጀትና አሰረጫጨት ጸባይ

35. ለሆቴሉ ጠቃሚ ነዉ የሚሉት መረጃ የሚያገኙት ምን፡ ተጠቅመዉ ፡ ነዉ

	በጣም ብዙ ጊዜ	ብዙ ጊዜ	አንዳንድ ጊዜ	አያደርጉም
ኮምፒዩተር				
ሞባይል				
ፊአክስ				
ሬዲዮ /ቴሌቭዥን/ጋዜጣ				

Appendix G Phase 2 Questionnaire for owners\managers of hotels (English)

Questionnaire for Owner/Manager of Hotels in Addis Ababa

Establishment Name:
Position:
Date: Time:

This questionnaire will be administrated by the researcher to the participants on face to face basis.

Section 1

Q1) Gender

1. Male
2. Female

Q2) Age

1. Under 20
2. 21-30
3. 31-40
4. 41-50
5. 51-60
6. Above 60

Q3) Education

1. Not able to read or write
2. Able to read and write
3. Elementary
4. High school
5. Vocational training
6. Under graduate degree
7. Graduate or above

Q4) Do you have hotel professional training

1. Yes
2. no

Q5) How many years of Hotel management experience do you have?

1. Less than one year
2. 1-3 years
3. 3-5 years
4. 5-10 years
5. More than 10 years

Section 2, Hotel Information

Q6) When was the hotel established?

.....

Q7) What is the star classification of your Hotel?

1. None
2. One
3. Two
4. Three
5. Four and above

Q8) How many fulltime staff is employed in the Hotel?

1. Less than 10
2. 10-25
3. 26-50
4. 51-75
5. 76—100
6. More than 100

Q9) How many rooms are there in the hotel?

1. Less than or equal to 15
2. 16-50
3. 51-75
4. 76-100
5. More than 100

Section 3 perception of ICT knowledge

Q10) Describe your knowledge on computer

1. I do not have
2. Self-thought
3. From school
4. From work
5. other

Q11) Describe your knowledge on Internet

1. I do not have
2. Self-thought
3. From school
4. From work
5. other

Q12) Describe your knowledge on website

1. I do not have
2. Self-thought
3. From school
4. From work
5. other

Section 4 Factors for the adoption of Information and Communications Technology

Q13) Do you use mobile phone for the hotel businesses

1. yes
2. no
3. I do not have

Q14) Do you have a computer in your hotel?

1. Yes
2. No

Q15) How often do you use computer for the following business operations?

	Very often	often	not very often	not at all	I do not know
Front office					
Accounting management Software					
Marketing					
Human resource					
Purchasing systems					
Payment					
banking					
Word processing					
spreadsheets					
Databases					
others					

Q16) Please state the impact of the following software in your hotel

	Very high impact	limited	none	I do not know
E-mail				
Accounting management Software				
Human resource software				
Purchasing software				
Word processing				
spreadsheets				
publishing				
others				

Q17) What was the main reason for the adoption of computer in your hotel?

.....

Q18) What were other reasons for the adoption of computer in your hotel?

.....

Q19) What was the main reason for not adoption computer in your hotel?

.....

Q20) What were other reasons for the non-adoption of computer in your hotel?

.....

Q21) Do you have internet in your hotel?

1. Yes
2. No

Q22) Do you charge your customers for using internet?

1. Yes, how much ? .....
2. No, why not?

.....

Q23) What was your main reason for adopting Internet in your hotel?

.....

Q24) What were other reasons for the adoption of internet in you hotel?

.....

Q25) What was the main reason for non-adoption of internet in your hotel?

.....

Q26) What were other reasons for the non-adoption for the non-adoption of internet?

.....

Q27) Do you have website for your hotel?

1. Yes
2. No

Q28) What was your main reason for the adoption of a website for your hotel?

.....

Q29) What were other reasons for the adoption of a websites?

.....

Q30) What was the main reason for the non-adoption of a website?

.....

Q31) What were other reasons for the non-adoption of a website?

.....

Q32) Do you have on line booking system on your website?

1. Yes
2. No
3. I do not know

Q33) How often do you update your website?

1. Daily
2. Weekly
3. Monthly
4. Every three months
5. Every six months
6. Not at all

Q34) What method your customers use to book in your hotel?

	Very often	often	not very often	not at all
Walk-in				
Telephone				
Fax				
E-mail				
Central reservation services (CRS)				
Travel Agent				

Section 5

Q35) How frequently you use ICT for information seeking

	Very often	Often	Sometimes	never
Computer				
Mobile				
Fax				
Radio/television				
News paper				

Thank you for your participation!!

Appendix H Phase 2 Questionnaire for owners/managers of tour operators (Amharic)

የ አ ስ ን ብ ኚ ፡ ድር ጅ ቶ ች ፡ ባ ለ ቤ ቶ ች / አ ስ ተ ዳ ዳ ሪ ዎ ች ፡ መ ጠ ይ ቅ ፡ ቅ ጽ ፡ በ አ ዲ ስ አ በ ባ

ክ ፍ ለ ፡ ከ ተ ማ.....ወ ረ ዳ .....የ ድ ር ጅ ት ፡ ስ ም.....

ክ ፍ ል 1

1. ጾ ታ
   - ሀ. ወ ን ድ
   - ለ. ሴ ት
2. እ ድ ሜ
   - ሀ. ከ 20 በ ታ ች
   - ለ. 21-30
   - ሐ. 31-40
   - መ. 41-50
   - ሰ. 51-60
   - ረ. ከ 60 በ ላ ይ
3. እ ባ ክ ዎ ን ፡ ከ ፍ ተ ኛ ው ን ፡ የ ት ም ህ ር ት ፡ ደ ረ ጃ ዎ ን ፡ ይ ም ረ ጡ
   - ሀ. ማ ን በ ብ ና ፡ መ ሡ ፍ ፡ የ ሚ ች ሉ ፡
   - ለ. ማ ን በ ብ ና ፡ መ ሡ ፍ ፡ የ ሚ ች ሉ ፡
   - ሐ. አ ን ደ ኛ ፡ ደ ረ ጃ
   - መ. ሀ ለ ተ ኛ ፡ ደ ረ ጃ
   - ሰ. የ መ ጀ መ ሪ ያ ድ ግ ሪ
   - ረ. የ መ ጀ መ ሪ ያ ድ ግ ሪ
   - ሰ. ደ ህ ረ ፡ ም ረ ቃ ፡ ወ ይ ም ፡ ከ ዛ ፡ በ ላ ይ
4. የ አ ስ ን ብ ኚ ነ ት ፡ ት ም ህ ር ት ፡ አ ለ ዎ ት
   - ሀ. አ ለ ኝ
   - ለ. የ ለ ኝ ም
5. ስ ን ት ፡ አ መ ት ፡ የ አ ስ ን ብ ኚ ነ ት ፡ ል ም ድ ፡ አ ለ ዎ ት
   - ሀ. ከ አ ን ድ ፡ አ መ ት ፡ በ ታ ች
   - ለ. 1-3 አ መ ት

ሐ. 3-5 አመት
መ. 5-10 አመት
ሰ. ከ 10 አመት፡ በላይ

ክፍል 2፣ የአስጎብኚ፡ ድርጅቶች፡ ሚጃ

6. የአስጎብኚ፡ ድርጅት፡ መቼ፡ ነው፡ የተመሰረተው .....

7. የአስጎብኚ፡ ድርጅቱ፡ የሚያስጎበኝበት፡አካባቢ፡ የት፡ ነዉ
.....
.....

8. ስንት፡ ቃሚ ሰራተኛ፡ አላችሁ
ሀ. ከ 10 ሰራተኛ፡ በታች
ለ. 10-25
ሐ. 26-50
መ. 51-75
ሰ. 76-100
ረ. መቶ፡ እና ከዛ፡ በላይ

9.አስጎብኚ፡ ድርጅቱ፡ ስንት፡ ቅርንጫፎች፡ አሉት .....

ክፍል 3 የሚጃና፡የመገናኛ፡ቴክኖሎጅ፡ እውቀትና፡ ግንዛቤ

10.ስለ፡ ኮምፒዩተር፡ የሚወቁትን፡ እውቀት፡ ያገኙት፡ እንዴት፡ ነው
ሀ. አላወቅም
ለ. ተመሳሳይ፡ ሆቴል፡ካላቸዉ፡ ግለሰቦች
ሐ. ከሬዲዮ፡እና፡ ከቴሌቭዥን
መ. እራሴን፡ በማስተማር
ሰ. ከመሥሪፍት
ረ. ከሌላ፡ ምንጭ

11.ስለ፡ ኢንተርነት፡ የሚወቁትን፡ እውቀት፡ ያገኙት፡ እንዴት፡ ነው
ሀ. አላወቅም
ለ. ተመሳሳይ፡ ሆቴል፡ካላቸዉ፡ ግለሰቦች
ሐ. ከሬዲዮ፡እና፡ ከቴሌቭዥን
መ. እራሴን፡ በማስተማር
ሰ. ከመሥሪፍት
ረ. ከሌላ፡ ምንጭ

12. ስለ፡ ዌብሳይት፡ የሚያውቁትን፡ እውቀት፡ ያገኙት፡ እንዴት፡ ነው

ሀ. አላውቅም

ለ. ተመላሳይ፡ ሆቴል፡ ካላቸው፡ ግለሰቦች

ሐ. ከሬዲዮ፡ እና፡ ከቴሌቭዥን

መ. እራሴን፡ በሚከተሚር

ሰ. ከመሥዘፍት

ረ. ከሌላ፡ ምንጭ

ክፍል 4 የሚጀና፡ የማናኛ፡ ቴክኖሎጅ፡ ሁኔታ

13. ሞባይል፡ ለአስጎብኚ፡ ድርጅት፡ ስራ፤ ይጠቀሚ ፡ ወይ

ሀ. አዎ

ለ. አልጠቀምም

ሐ. አላውቅም

14. ኮምፒዩተር፡ በአስጎብኚ፡ ድርጅት፡ መስጥ፡ አለ ወይ

ሀ. አለ

ለ. የለም ወደ፡ ቁጥር፡ 19 ያምጡ

ሐ. አላውቅም ወደ፡ ቁጥር፡ 34 ያምጡ

15. ምን ያህል ነዉ ለሚጥሉት ለአስጎብኚ፡ ድርጅቱ፡ አገልግሎት በኮምፒዩተር የሚጠቀሞት

	በጣም ብዙ ጊዜ	ብዙ ጊዜ	አንዳንድ ጊዜ	አንጠቀምም	አላውቅም
Tour operator planning					
ሂሳብ፡ አያያዝ					
Marketing					
Human Resource					
ግዢ					
ክፍያ					
ባንክ					

Word processing					
Spread sheet					
Database					
ሌሎች					

16. እባክወን የሚከተሉት ሶፊትዌሮች የአስንብኺ፡ ድርጅት፡ ላይ ያለዉን እንደምታ ይንገሩን

	በጣም ትልቅ ተጽእኖ	መጠነኛ ነዉ	ምንም የለዉም	አላወቅም
ኢሜል				
ደህረ ገጽ				
Word processing				
Spreadsheet				
Publishing				
ሐሳብ አያያዝ ና ገንዘብ				
ሆቴል አስተዳደር				
ግዢ				
ሌሎች				

17. ኮምፒዩተር ፡
ለሚገባት፡ ያሳማዎት፡ ዋናዉ፡ ምክንያት፡ ምንድን፡ ነዉ .....

18. ኮምፒዩተር ፡
ለሚገባት፡ ያሳማዎት፡ ሌሎች፡ ምክንያቶችስ፡ ምንድን፡ ናቸዉ

.....
.....
.....

19. ኮምፒዩተር ፡
ላለሚገባት፡ ያሳማዎት፡ ዋናዉ፡ ምክንያት፡ ምንድን፡ ነዉ.....

20. ኮምፒዩተር ፡
ላለሚገባት፡ ያሳማዎት፡ ሌሎች፡ ምክንያቶችስ፡ ምንድን፡ ናቸዉ
.....
.....
.....

21. ኢንተርኔት፡
በአስጎብኚ፡ ድርጅት፡ ወስጥ፡ አለ፡ ወይ

ሀ. አለ
ለ. የለም ወደ፡ ቁጥር፡ 25 ያምሩ
ሐ. አላወቅም ወደ፡ ቁጥር፡ 25 ያምሩ

22. ለኢንተርኔት፡
ታስከፍላላችሁ ወይ፣

ሀ. አዎ ስንት ነዉ፤ የምታስከፍሉት .....
ለ . አይደለም፡ ለምን አታስከፍሉም
.....
.....

23. ኢንተርኔት ፡
ለሚገባት፡ ያሳማዎት፡ ዋናዉ፡ ምክንያት፡ ምንድን፡ ነዉ .....

24. ኢንተርኔት ፡
ለሚገባት፡ ያሳማዎት፡ ሌሎች፡ ምክንያቶችስ፡ ምንድን፡ ናቸዉ

.....
.....
.....

25. ኢንተርኔት ፡
ላለሚገባት፡ ያሳማዎት፡ ዋናዉ፡ ምክንያት፡ ምንድን፡ ነዉ.....

26. ኢንተርኔት ፡
ላለሚገባት፡ ያሳማዎት፡ ሌሎች፡ ምክንያቶችስ፡ ምንድን፡ ናቸዉ

.....
.....
.....

27. ደህረ፡ገ ፡
በአስጎብኚ፡ ድርጅት፡ ወስጥ፡ አለ፡ ወይ

ሀ. አለ
ለ. የለም ወደ፡ ቁጥር፡ 26 ያምሩ
ሐ. አላወቅም

28. ደህረ፡ ገሰ ፡
ለሚገባት፡ ያሳማዎት፡ ዋናዉ፡ ምክንያት፡ ምንድን፡ ነዉ .....

29. ደህረ፡ ገሰ ፡
ለሚገባት፡ ያሳማዎት፡ ሌሎች፡ ምክንያቶችስ፡ ምንድን፡ ናቸዉ

……
……
……

30. ድህረ፡ ገሰ ፡

ላለሚከገባት፡ ያሳመዎት፡ ዋናዉ፡ ምክንያት፡ ምንድን፡ ነዉ……

31. ድህረ፡ ገሰ ፡

ላለሚከገባት፡ ያሳመዎት፡ ሌሎች፡ ምክንያቶችስ፡ ምንድን፡ ናቸዉ

……
……
……

32. ድህረ፡ ገጹ፡

የጎብኚዎች፡ መቀበያ፡ አለዉ፡ ወይ(online reservation)

ሀ. አዎ አለዉ

ለ. የለዉም

ሐ. አላወቅም ምን አይነት ችግር፡ ገጠመዎት

……
……
……

33. ድህረ፡ ገጹ፡ በስንት

ጊዜ ነዉ የሚከተካለዉ(update)

ሀ. በየቀኑ

ለ. በየሳምንቱ

ሐ. በየወሩ

መ. በየሶስት ወር

ሠ. በየስድስት ወር

ረ. ተደርጎ፡አያወቅም

34. እባክዎን እንግዶች

የአስጎብኚ፡ ድርጅቱን፡አገልግሎት፤የሚጠይቁት በየትኛዉ መንገድ ነዉ

	በጣም ብዙ ጊዜ	ብዙ ጊዜ	አንዳንድ ጊዜ	አያደርጉም
በግንባር				
በስልክ				
በፋክስ				
በኢሜል				

በሆቴል፡ አማካይነት				
የጉዞ ወኪል				

ክፍል 6 የሚጃ ጥማት፤ ፍላጎት፤ አደረጃጀትና አሰረጫጨት ጳባይ

35. ለአስጎብኚ፡ ድርጅት፡ ጠቃሚነዉ የሚሉት መረጃ የሚገኙት ምን፡ ተጠቅመዉ ፡ ነዉ

	በጣም ብዙ ጊዜ	ብዙ ጊዜ	አንዳንድ ጊዜ	አያደርጉም
ኮምፒዩተር				
ሞባይል				
ፊአክስ				
ከግለሰቦች				
ሬዲዮ /ቴሌቭዥን/ጋዜጣ				

Appendix I Phase 2 Questionnaire for owners/managers of tour operators (English)

Questionnaire for owners/manager tour operators in Addis Ababa

Establishment Name:
Position:
Date: Time:

This questionnaire will be administered by the researcher to the participants on a face-to-face basis.

Section 1

Q1) Gender

1. Male
2. Female

Q2) Age

1. Under 20
2. 21-30
3. 31-40
4. 41-50
5. 51-60
6. Above 60

Q3) Education

1. Not able to read or write
2. Able to read and write
3. Elementary
4. High school
5. Vocational training
6. Undergraduate degree
7. Graduate or above

Q4) Do you have tour operation professional training

1. Yes
2. no

Q5) How many years of tour operation management experience do you have?

1. Less than one year
2. 1-3 years
3. 3-5 years
4. 5-10 years
5. More than 10 years

Section 2 Tour operator information

Q6) When was the tour operator established?

.....

Q7) Please specify area of operation.

.....

Q8) How many full-time staff are employed in the tour operation?

1. Less than 10
2. 10-25
3. 26-50
4. 51-75
5. 76—100
6. More than 100

Q9) How many branches do you have?

Section 3 Perception of ICT knowledge

Q10) Describe your knowledge of computers

1. I do not have
2. Self-taught
3. From school
4. From work
5. other

Q11) Describe your knowledge of the Internet

1. I do not have
2. Self-taught
3. From school
4. From work
5. other

Q12) Describe your knowledge of websites

1. I do not have
2. Self-taught
3. From school
4. From work
5. other

Section 4 The State of Information and Communications Technology

Q13) Do you use mobile phones for the business

1. yes
2. no
3. I do not have

Q14) Do you have a computer in your business?

1. Yes
2. No

Q15) How often do you use a computer for the following business operations?

	very often	often	not very often	not at all	I do not know
Tour operation planning					
Accounting management software					
Marketing					
Human resource					
Purchasing systems					
Payment					
Banking					
Word processing					
Spreadsheets					
Databases					
Others					

Q16) Please state the impact of the following software in your business

	very high impact	Limited	none	I do not know
E-mail				
Accounting management software				
Human resource software				
Purchasing software				
Word processing				

Spreadsheets				
Publishing				
Others				

Q17) What was the main reason for the adoption of a computer in your business?

.....

Q18) What were other reasons for the adoption of a computer in your business?

.....

Q19) What was the main reason for non-adoption of a computer in your business?

.....

Q20) What were other reasons for the non-adoption of a computer in your business?

.....

Q21) Do you have Internet in your business?

1. Yes
2. No

Q22) Do you charge for the Internet?

1. Yes, how much ? .....
2. No, why not?

.....

Q23) What was your main reason for adopting the Internet in your business?

.....

Q24) What were other reasons for the adoption of the Internet in you business?

.....

Q25) What was the main reason for the non-adoption of the Internet in your business?

.....

Q26) What were the other reasons for the non-adoption of the Internet?

.....

Q27) Do you have a website for your business?

1. Yes
2. No

Q28) What was your main reason for the adoption of a website for your business?

.....

Q29) What were the other reasons for the adoption of a website?

.....

Q30) What was the main reason for the non-adoption of a website?

.....

Q31) What were the other reasons for the non-adoption of a website?

.....

Q32) Do you have an on-line booking system on your website?

1. Yes
2. No
3. I do not know

Q33) How often do you update your website?

1. Daily
2. Weekly
3. Monthly
4. Every three months
5. Every six months
6. Not at all

Q34) What method do your customers use to book your services ?

	very often	often	not very often	not at all
Walk-in				
Telephone				
Fax				
E-mail				
Central reservation services (CRS)				
Travel Agent				

Section 5

Q35) How frequently you use ICT for information seeking

	Very often	Often	sometimes	never
Computer				
Mobile				

Fax				
Radio/television/ newspaper				

Thank you for your participation!!

***Appendix J* Code for list of participants of first phase**

Hotel	Code	Interview date	Interview time	Length	Comment
Hotel 1	C1	16/3/10	9:10	1:28:52	
Hotel 2	C2	16/3/10	14.35	48:05	
Hotel 3	C3	18/3/10	8:13	40:40	
Hotel 4	C4	18/3/10	13:20	1:19:02	
Hotel 5	C5	21/3/10	10:11	1:25:54	
Hotel 6	C6	21/3/10	12:29	48:49	
Hotel 7	C7	22/3/10	8:39	31:45	
Hotel 8	C8	22/3/10	15:45	28:53	
Hotel 9	C9	23/3/10	7:40	46:57	
Hotel 10	C10	23/3/10	12:11	35:37	
Hotel 11	C11	23/3/10	18:03	35:48	
Hotel 12	C12	233/10	14:28	47:45	
Hotel 13	C13	27/3/10	10:11	56:45	
Hotel 14	C14	28/3/10	12:41	45:25	
Hotel 15	C15	24/3/10	09:30	35:10	
Hotel 16	C16	24/3/10	12:00	40:00	Not recorded

Appendix K L***e***tter seeking cooperation from hoteliers and tour operators (Amharic)

University of West London
St Mary's Road
Ealing
W5 5RF
London UK

01/11/2011

ለሚመለከተዉ፡ ሁሉ።

አቶ፡ ግርማ፡ ለገሰ፡- የኢትዮጵያ እስታትስቲክስ ኤጀንሲ፡ ባልደረባ፡ የሆኑት; ለጥናት፡ የሚረዳ፡ መረጃ፡ እያሰባሰቡ፡ ይገኛሉ፡ ይህንን፡ ተረድተዉ፡ ከፍተኛ፡ የሆነ፡ ትብብር፡ እንዲያደርጉላቸው፡ በትህትና፡ እጠይቃለሁ፡

ወገኔ፡ ደመቀ

e-mail wegene.demeke@uwl.ac.uk

UNIVERSITY OF WEST LONDON

Appendix L Letter seeking cooperation of hoteliers and tour operators (English)

University of West London
St Mary's Road,
Ealing
W5 5RF
London
UK

01/11/2011

To whom it may concern

Mr. Girma Legesse is a staff member of the Ethiopian Central Statistical Agency, is collecting data to study the adoption and non-adoption of ICT in the hotels and tour operators businesses. You are cordially requested to participate in the research.

Wegene Demeke
e-mail wegene.demeke@uwl.ac.uk

Appendix M Informed verbal consent statement English

Dear potential participants

The aim of this study is to find the factors that affect the adoption of ICTs in the hotel and tour operator businesses. You are requested to participate voluntarily in this study. Your name including the hotels name will be held confidential.

If you wish, you can withdraw your participation at any stage.

Thank you for your participation.

Wegene Demeke / Girma Leggese

Appendix N Informed verbal consent statement Amharic

ዝር ዝር ፡ መግለጫ ለእጩ ተሳታፉዎች

የ ዚህ ፡ ጥና ት ፡ ዋና ፡ አላማ ፡ የ መረጃ ፡ እና ፡ የ መጎ ና ኛ ፡ ቴክ ኖሎ ኂ ፡ የ ግዢ ፡ እና ፡ ጥቅም ፡ ላ ይ ፡

ማዋ ልን ፡ የ ሚረ ዱ ፡ እና ፡ የ ሚከ ለ ክ ሉ ፡ ዋና ፡ ምክ ን ያ ቶች ን ፡ መፈ ለ ግ ፡ ነ ው ። ጥና ቱ ፡ የ ሚደ ረ ገ ው ፡

በ ሆቴ ሎች ፡ እ ና ፡ በ አ ስ ጎ ብኝ ፡ ድር ጅ ቶች ፡ ላ ይ ፡ ይሆና ል ።

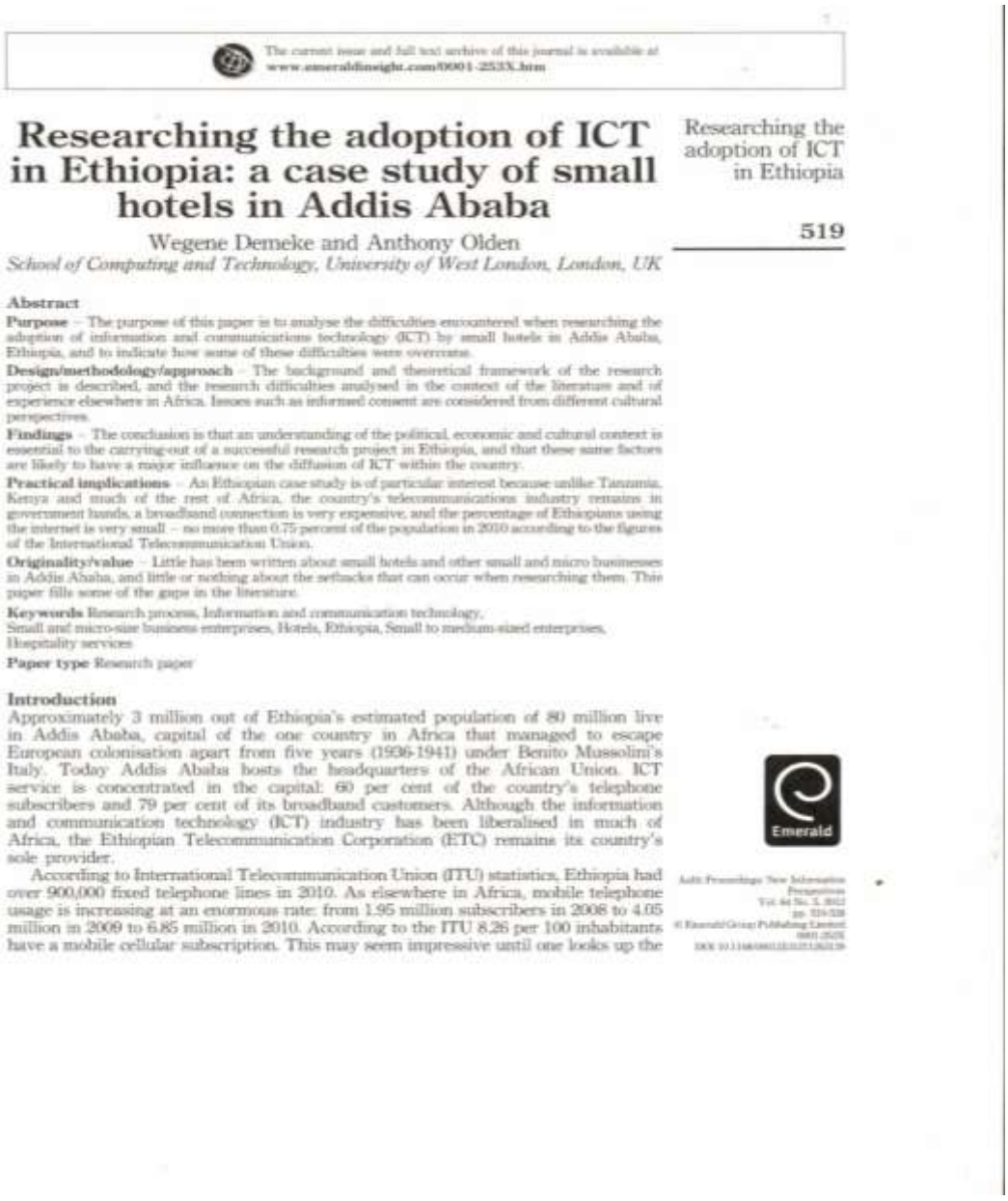
በ ዚህ ፡ ጥና ት ፡ ላ ይ ፡ እ ን ዲሳ ተፉ ፡ ተጋ ብዘ ዋ ል ። ስ ምዎ ት ም ፡ሆነ ፡ የ ሆቴ ሉ ፡ ስ ም ፡ በ ሚስ ጥር ፡

ይያ ዛ ል ፡ መሳ ተፈ ፡ ካ ልፈ ለ ጉ ፡ በ ማን ኛ ዉም ፡ ጊ ዜ ፡ ማቆ ም ፡ የ ሚቸ ሉ ፡ መሆኑ ን ፡ እ ና ሳ ስ ባ ለ ን ።

ለ ት ብብር ዎ ፡ በ ቅ ድሚያ ፡ እ ና መሰ ግ ና ለ ን ፡

ወገ ኔ ፡ ደ መቀ ፡ እ ና ፡ ግ ር ማ ፡ ለ ገ ሰ ።

Appendix O Demeke, W. & Olden, A. (2012) Researching the adoption of ICT in Ethiopia: a case study of small hotels in Addis Ababa.* Aslib Proceedings, *64(5), p.519-528.



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Researching the adoption of ICT in Ethiopia: a case study of small hotels in Addis Ababa

Wegene Demeke and Anthony Olden
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Abstract

Purpose – The purpose of this paper is to analyse the difficulties encountered when researching the adoption of information and communications technology (ICT) by small hotels in Addis Ababa, Ethiopia, and to indicate how some of these difficulties were overcome.

Design/methodology/approach – The background and theoretical framework of the research project is described, and the research difficulties analysed in the context of the literature and of experience elsewhere in Africa. Issues such as informed consent are considered from different cultural perspectives.

Findings – The conclusion is that an understanding of the political, economic and cultural context is essential to the carrying-out of a successful research project in Ethiopia, and that these same factors are likely to have a major influence on the diffusion of ICT within the country.

Practical implications – An Ethiopian case study is of particular interest because unlike Tanzania, Kenya and much of the rest of Africa, the country's telecommunications industry remains in government hands, a broadband connection is very expensive, and the percentage of Ethiopians using the internet is very small – no more than 0.75 percent of the population in 2010 according to the figures of the International Telecommunication Union.

Originality/value – Little has been written about small hotels and other small and micro businesses in Addis Ababa, and little or nothing about the setbacks that can occur when researching them. This paper fills some of the gaps in the literature.

Keywords Research process, Information and communication technology, Small and micro-size business enterprises, Hotels, Ethiopia, Small to medium-sized enterprises, Hospitality services

Paper type Research paper

Introduction

Approximately 3 million out of Ethiopia's estimated population of 80 million live in Addis Ababa, capital of the one country in Africa that managed to escape European colonisation apart from five years (1936-1941) under Benito Mussolini's Italy. Today Addis Ababa hosts the headquarters of the African Union. ICT service is concentrated in the capital: 60 per cent of the country's telephone subscribers and 79 per cent of its broadband customers. Although the information and communication technology (ICT) industry has been liberalised in much of Africa, the Ethiopian Telecommunication Corporation (ETC) remains its country's sole provider.

According to International Telecommunication Union (ITU) statistics, Ethiopia had over 900,000 fixed telephone lines in 2010. As elsewhere in Africa, mobile telephone usage is increasing at an enormous rate: from 1.95 million subscribers in 2008 to 4.05 million in 2009 to 6.85 million in 2010. According to the ITU 8.26 per 100 inhabitants have a mobile cellular subscription. This may seem impressive until one looks up the

ITU figures for other countries in Eastern Africa: Tanzania has 46.8 subscribers per 100 inhabitants, while Kenya has 61.63. The percentage of people using the internet in Ethiopia is tiny (0.75 per cent) by comparison with the others: Tanzania (11 per cent) and Kenya (25.9 per cent) (ITU, 2012).

ICT's role in development and poverty reduction

National and international organisations have identified ICT's role for development and poverty reduction. The United Nations (UN) recognises this and passed resolution 56/258 (United Nations, 2001):

> Information and communication technologies are among the critical determinants for creating a global knowledge-based economy, accelerating growth, raising competitiveness, promoting sustainable development, eradicating poverty and facilitating the effective integration of all countries into the global economy.

The World Summit on the Information Society (WSIS) (2003) declared its desire and commitment:

> To build a people-centred, inclusive and development-oriented Information society, where everyone can create, access, utilise, and share information and knowledge, enabling individuals, communities and peoples to achieve their full potential in promoting their sustainable development and improving their quality of life premised on the purposes and principles of the Charter of the United Nations and respecting fully and upholding the Universal Declaration of Human Rights.

WSIS identified ICT as important in meeting the Millennium Development Goals (MDGs), which have the aim of halving poverty by 2015. It particularly identified the potential of ICT to generate employment in the developing world (UN, 2001). It also identified ICT as a tool for increasing human resource capacity. Ethiopia participated in both the 2003 and the 2005 WSIS summit conferences. Ethiopia had a five-year *Plan for Accelerated and Sustained Development to End Poverty* (PASDEP) for the period 2005/2006-2009/2010. This stipulated that ICT play a critical role to promote growth and reduce poverty (UNESCO, 2007). The ICT strategy identified five elements:

(1) promoting human resource development in the ICT field;

(2) mainstreaming the use of ICT in all sectors of the economy, in the administration of government, and in the education system;

(3) developing the necessary telecommunication infrastructure;

(4) promoting research and development through ICT; and

(5) creating and enabling the legal and regulatory framework.

The New Partnership for Africa's Development (NEPAD) is an initiative instituted by the African Union. It identified ICT as having the potential to reduce poverty and bring about sustainable growth and development for Sub-Saharan Africa. It formed an e-Africa programme with the task of developing policies, strategies and programmes on a continent-wide base (Nepad, 2009). One programme is to connect 20 African countries with a broadband network, with a view to providing further integration of the continent and facilitating more ICT use for development and poverty reduction.

Research on ICT diffusion in Ethiopia

An exploratory field visit was made to Addis Ababa in 2009 (two more visits have taken place since then) to get a sense of the extent of ICT use by different sectors of the economy and to find out how much research was conducted. At Addis Ababa University both the Economics and Informatics departments were visited, including their libraries. No significant study appears to have been conducted in either department on the adoption of ICT in small and micro-size business enterprises (SMBEs). The Forum for Social Studies and the Ethiopian Telecommunication Institute were also visited. The result was the same: no significant studies on the diffusion of ICT in SMBEs. However, in the Ethiopian Telecommunication Institute there are some studies on the distribution of internet use by companies. In addition, secondary data were collected from the Ethiopian Telecommunication Corporation and the Ethiopian Central Statistics Agency.

Theoretical framework

There are several models explaining the diffusion of technology in society. Rogers' diffusion of innovation theory is used in this investigation. According to Rogers diffusion of innovation is a social process whereby new ideas or practices are communicated through certain channels to a particular social group through time, and as a result the innovation is adopted or rejected by individuals or organisations (Rogers, 2003). The main four concepts of the theory are the innovation itself, the communication channel, time and the social system. The innovation characteristics that determine the rate of the diffusion adoption are its relative advantage, compatibility, complexity, trialability, and observability.

The limitations of this theory (first published in 1962) were noted as early as 1971, especially its bias towards pro-innovation stance: that the assumption of new innovations have positive outcomes and need to be diffused and adopted by all members of the social groups (Rogers and Shoemaker, 1971).

Despite its limitations, the theory is more robust in explaining the adoption/rejection of ICT systems than any other. The suitability of the theory and its application and use in diffusion studies in different academic fields such as economics, sociology, communication, education, public health, marketing and geography shows its strength. Rogers develops his theory of diffusion in different socio-economic settings when compared to developing countries. However, he argues that innovation diffusion researchers in developing countries should focus on equity (Rogers, 2003). Many African researchers agree that more emphasis need to be given to equity rather than to diffusion study (Kiplang'at and Ocholla, 2005). It is not ICT as an innovation that matters, rather, it is the socio-economic factors compounded by human resource capacity, politics and culture that has the great effect on the diffusion process. Furthermore, Kiplang'at and Ocholla emphasise the need for further study on the effects of these factors for the diffusion of ICT in developing countries. In addition to their work on the diffusion of agricultural research in Kenya there is a study on the diffusion of ICT in Library and Information Science education in Sub-Saharan Africa (Minishi-Majanja, 2007).

Problem for investigation and research questions

According to Patricof and Sunderland (2006), small- and micro-size business enterprises are the engines of wealth creation in both developing and developed countries. If ICT does have a role in development and poverty reduction, what impact is it having on SMBEs in

Addis Ababa? Why is its diffusion so limited? There is a gap in our knowledge here, and this investigation aims to gather, analyse and interpret data from one particular sector (small hotels) that will go towards filling it. The main research question is:

RQ1. What is the relationship between political, economic, and social factors and the adoption and use of ICT by the small hotel sector in Addis Ababa?

Subsidiary research questions include:

- What factors in Ethiopia influence the diffusion of ICT?
- What impact do local ICT policies have?
- What economic factors are holding back the adopters in the small hotel sector?
- What are the facilitating and resistance agents?

Research design

A preliminary list was prepared of the likely main stakeholders in adopting ICT in Addis Ababa. During the exploratory fieldwork in 2009 the following were visited:

- Ethiopian Telecommunication Corporation.
- Ministry of Culture and Tourism.
- ICT for Development Agency.
- Ministry of Finance and Development.
- Central Statistical Agency.
- Micro and Small Enterprise Development Agency.

The aims were to get a sense of the impact the stakeholders have on ICT diffusion, to find out how willing the organisations would be to participate in the research, and to form personal contacts. Although some organisations did provide secondary data it proved extremely difficult to secure interviews: a foretaste of problems to come. Small- and micro-size business enterprises from different sectors of the economy were also visited:

- manufacturing (five);
- retail (four);
- hotels (five);
- tourism (four); and
- education (three).

There was a notable difference in the level of cooperation between private and public sectors: getting the public sector to collaborate in the research proved challenging, although some public organisations provided limited cooperation. The private sector was much more helpful. The exploratory field visit indicated that the use of ICT in Ethiopia was very limited, and that variations occurred from sector to sector.

The following criteria were used to help determine the sector(s) to be included in the research:

- the likely cooperation of key informants in organisations;
- the adoption and use of ICT in the sector, particularly mobile phones, computers, and internet and wireless systems;

- the use of applications requiring adoption of ICT systems that support the business, for example accounting and payroll; and
- a population that includes non-adopters of ICT in their businesses, in order to get an insight into resistance factors.

Why the small hotel sector? Obviously Addis Ababa has a Hilton and other prestigious and expensive luxury hotels in which well-off tourists and senior African diplomats stay. These hotels have the best ICT that the country can provide, because their guests are used to high standards and expect them. However, over 70 per cent of Ethiopians are trapped in poverty, and Ethiopians visiting their capital city, if not staying with friends or relatives, want somewhere more affordable, even those who are getting their expenses paid. Many small hotels are privately owned, and the sector's adoption and use of ICT was found to be higher than that of other privately owned and run small and micro-size business enterprises. In addition, it seemed likely that there would be sufficient participants to survey.

The doctoral research on which this paper is based is not yet complete, and its findings will be published later. This particular paper looks at the difficulties that the research encountered in the view that such a discussion is likely to interest others conducting research in Ethiopia and elsewhere. As the first author is Ethiopian by background, and an Amharic speaker, the magnitude of these difficulties was not anticipated.

Government monopolies and control

Successive Ethiopian governments have kept major organisations under public ownership, including telecommunications, electricity, airlines and shipping services. Their profits go directly to the government treasury. As a result of their monopoly these organisations become very powerful and are able to set expensive tariffs and provide poor customer service. At one stage in Ethiopia the price of broadband service was the second most expensive in the world. Interruption of the telephone system is a regular occurrence and this is also true for electric power. Through hoteliers pay their monthly subscription for the broadband system, there were times that there is no broadband service, as a result of a fault. This can last a week or two. No refund is provided by the telecom operator, nor is there demand for one from the hoteliers. Rectifying telephone faults can take months. As one frustrated hotelier commented:

> When the telephone lines start giving out a cracking noise, it is a sign that the telecommunications manhole down the road is filling up the water. If the water is not pumped out then service interruption will occur. I send my staff to pump out the water from the manhole. The pump cost me around 7,000 birr (approximately £350 Sterling).

Internet service is critical for the operation of hotels. Without the internet customers will check out and move to the next hotel, where they can get access.

Most hotels are required to use the same software (C-net) by the government, the exceptions being luxury ones such as the Hilton and the Sheraton. Even in small coffee houses the till system is connected to the government tax office, so that a transaction as small as the purchase of a cup of coffee is recorded for value added tax purposes. The authorities know exactly how much money goes into the tills. If foreign hotel guests pay the bill in foreign currency this goes to the government and the hotel will receive

the equivalent in local currency. If a till stops working and the fault is not reported immediately to the authorities the outcome could be prison.

The research process: setbacks and successes

Government organisations

As mentioned above, attempts to interview staff of government departments and government-run organisations were unsuccessful. There is fear that the opinion of the participant may be taken as a criticism of the government, and that this could result in the loss of employment or some other undesirable consequence. Although the research was an assessment of the organisation, by implication it was taken to be an assessment of the participant. Managers generally referred the request for an interview to a more senior manager, although the researcher was asked to liaise with the public relations officer in some instances. Such "gatekeepers" allow what they think is appropriate or do not allow it if they think the result will be negative publicity for the organisation.

Strategies used by managers to deny access included trying to dictate what the interview should focus on: "only operational matters of the ICT issues of the organisation. If you want to conduct [an interview] on issues of ICT policy then you have to go to the Minister's office". Some managers stated that they would co-operate and facilitate the interview, and will telephone the researcher after arranging appointments with more senior managers. However the arrangement was never made and the response to repeated requests was always the same: we will contact you in due course. They never did. Other managers made demands on the researcher that were impossible to fulfil. In one particular case the researcher was requested to bring a letter of endorsement from the British Embassy in Addis Ababa, as well as one from Ethiopian Embassy in London. This was in addition to providing a copy of the researcher's passport, address in the UK, a list of the research questions, a report on the aims of the proposed interview, and ultimately a copy of the final thesis. Other managers simply refused to participate at all.

The reluctance to participate was not limited to government organisations, but also occurred in a number of private ones. Free expression is limited, particularly if it is considered to be a criticism of the government. Opinions and comments can be taken out of their context and can result in termination of employment or in the worst case being sent to prison. For this reason many government employees avoid participation in research. Furthermore, it is difficult to know how one's opinion might be judged by government officials in changing circumstances.

Hotels

All financial institutions, private hotels, tour operators, and travel agencies in Ethiopia were nationalised in 1979 by the military government in power at the time. The Ministry of Cultures and Sport still owns and operates the majority of these hotels. When the hotel managers were approached for interviews the researcher was asked to get a letter of endorsement from the Ministry. But amongst other things the Ministry wanted the names of the intended participants before issuing the letter. This had ethical implications (it compromised anonymity for one thing), and it was clear that a change of direction was required if enough data was to be collected.

Some private hotels were built in the years after the fall of the military government in 1991. Aware that owners and managers of private hotels would be more accommodating,

contact was initiated in advance of another fieldwork visit to Addis Ababa. A total of 55 hotel e-mail addresses and telephone numbers were gathered from travel guidebooks, the web sites of international organisations (ones running seminars and meetings in Addis Ababa), Yellow Page directories, and from the hotels' own web sites.

In total, 55 e-mails went to owner/managers of hotels requesting an interview, but just four replies were received. The researcher then made a number of telephone calls to hotels to speak to the owners/managers. Even though he speaks the local language, Amharic, this did not result in any participants either.

After travelling to Addis Ababa, the researcher visited hotels in person. As a result 29 managers/owners agreed to be interviewed, one declined. One of the managers who agreed remarked that that he had received the e-mail request two months earlier. He went back to his office and returned after a few minutes and said that he had just replied to it! Thus, face-to-face approaches were found to be most effective in convincing potential interviewees. On the other hand, managers/owners do not have regular working hours when they can be found in their offices. Furthermore, diaries are not much used. It often took two, three or more visits before the interview took place. Not everyone who agreed to participate in an interview actually did so because of personal commitments, or simply because they changed their mind. In one particular case three meetings were arranged: at the first the manager did not turn up, at the second he said he did not have the 30 minutes to spare, and at the third he again failed to turn up.

Locating the premises

In the exploratory visit the researcher went to the Micro and Small Business Development Agency, the Ethiopian Central Statistics Agency, and the Chamber of Commerce of Addis Ababa to gain the number and distribution of small and micro-size business enterprises by sector in Addis Ababa. The Chamber of Commerce had 6,000 registered members. In Addis Ketema (sub-city administration) there are 15,000 registered traders. However, these lists are rarely up-to-date or accurate (Curran and Blackburn, 2001).

The Ministry of Trade and Industry and the Ministry of Culture and Tourism were approached to get the size of the hotels and associated businesses. The data from the former's lists provide the business owner's name and address, and the year in which the licence was renewed. However, the data did not show the business name or the business address. Furthermore, the data also shows that 25 per cent of the businesses on the list had not renewed their licenses for the last six years. Therefore, it was difficult to establish if the business was still operational. Obviously, lists of businesses and their physical location are essential if one is to collect data. The available map from the Ethiopian Mapping Agency (EMA) did not provide a detailed location map by house number. The level of detail on the map is limited to the demarcation of the sub-cities administration level. To locate a particular business physically, even if one has the full address, requires assistance from the local administration office that has knowledge of the house numbering layout. In most cases addresses are given with reference to distinguishable landmarks. To take a large luxury hotel as an example, directions to the Hilton are listed on its web site as follows:

> From Bole International Airport, head north for Africa Avenue, then turn right towards St Stefanos Church and right again onto Menelik II Avenue. The Hilton Addis Ababa hotel is opposite the Ministry of Foreign Affairs (Hilton, 2012).

Ethical issues

Ethical standards must be applied to research, but processes such as the securing of written consent are not necessarily appropriate for all survey populations, for example for refugees or for residents of countries such as Ethiopia, where there is a high level of significance attached to the signing of a document. A request for a signature can imply that a low-level of trust exists between the parties. In exceptional circumstances it can even imply that there are ulterior motives, such as that one of the parties might benefit from the document in the future. Handing out consent forms is culturally questionable and is likely to create a state of distrust between the researcher and the potential participant. An Ethiopian may be taking some level of risk by participating in research. To minimise the risk, and to maximise the contribution to the research, trust between participant and researcher is essential. The nature of the topic, the participant's own background and experience of the world, and his or her face-to-face assessment of the researcher will all come together in a decision to participate or not. E-mails and telephone calls from London – even in Amharic – will not suffice, nor will the distribution of consent forms for signing.

Consent forms are an indication that an individual is participating in research of his or her own free will. They protect those who are under study, but they also protect the researcher and the researcher's employer. Israel and Hay (2006) argue that the strict application of informed consent, which is mainly designed for biomedical research, is not applicable for all social science research. Murphy and Dingwall (2007), writing about the conduct of ethnographic research in healthcare settings, argue that the nature of risks for participants is very low when compared with biomedical research. They maintain that "informed consent in ethnography is neither achievable nor demonstrable in the terms set by anticipatory regulatory regimes that take clinical research or biomedical experimentation as their paradigm cases" (Murphy and Dingwall, 2007, p. 2225). Surveying owners and managers of small hotels in Ethiopia differs from conducting ethnographic research in hospital wards or out-patient clinics in the UK, but the same reservations about biomedical-type informed consent apply. Two experienced Ethiopian researchers were consulted for a local perspective on the place of informed consent in non-biomedical research. In their opinion consent forms showed a lack of sensitivity and created tension between researcher and participant, the usual result being that the participant opts out. Also, they believed that there was a hypocritical element to such forms: they exist more for the protection of Western researchers and research institutions than for the protection of the Ethiopians under study. In the interviews conducted for this project, participants were given full details of the research and gave verbal consent for their participation.

Conclusion

All research projects encounter obstacles, but some are more daunting than others. Research with refugees, for example, presents "a unique set of methodological problems" according to Bloch (1999, p. 380). Olden (1999) got no responses when he wrote to the numerous Somali refugee associations in London, just as this research project got none from the 55 e-mails sent to small hotels in Addis Ababa. An e-mail survey would never have worked for this project. Indeed, some participants refused to allow their interviews to be audio-recorded: "I do not know what you are going to use it for [even though this had been explained]. What if the recording falls into other people's hands? I do not believe it will be secure and I do not want to take the risk".

Certain countries present difficulties for non-nationals, or indeed for their own nationals who have resided elsewhere for some time. The Soviet Union was not a welcoming destination for US researchers during the Cold War. African countries are often understandably wary of researchers (particularly foreign researchers) investigating sensitive topics. Research clearance at national level may be required, for nationals as well as for foreigners. The Tanzania Commission for Science and Technology is the relevant body in Tanzania, and a formal application has to be made and a fee paid. A link with a local university or other research institute is often required in Africa, together with a topic that the country considers relevant to its development, evidence that research skills will be passed on to locals, and an undertaking that regular reports on work in progress will be made and copies of the final doctoral thesis, research report or publications deposited.

Cultural awareness and sensitivity are crucial for the successful conduct of research in Africa, and even insiders who ought to know better can make errors and face setbacks at times. In the 1960s and 1970s some US academics believed that the approaches that had proved so successful in the sciences could be replicated in other disciplines (Goldhor, 1972), and that the steps that had made their country so wealthy were the steps that other countries must follow. Such naiveté is long gone, but even today some Western academics believe that "one size fits all" and that the appropriate size is the Western one. Researching in Ethiopia would seem to indicate that this is not the case, and we hope that a sharing of our Addis Ababa research experience will be of interest to others.

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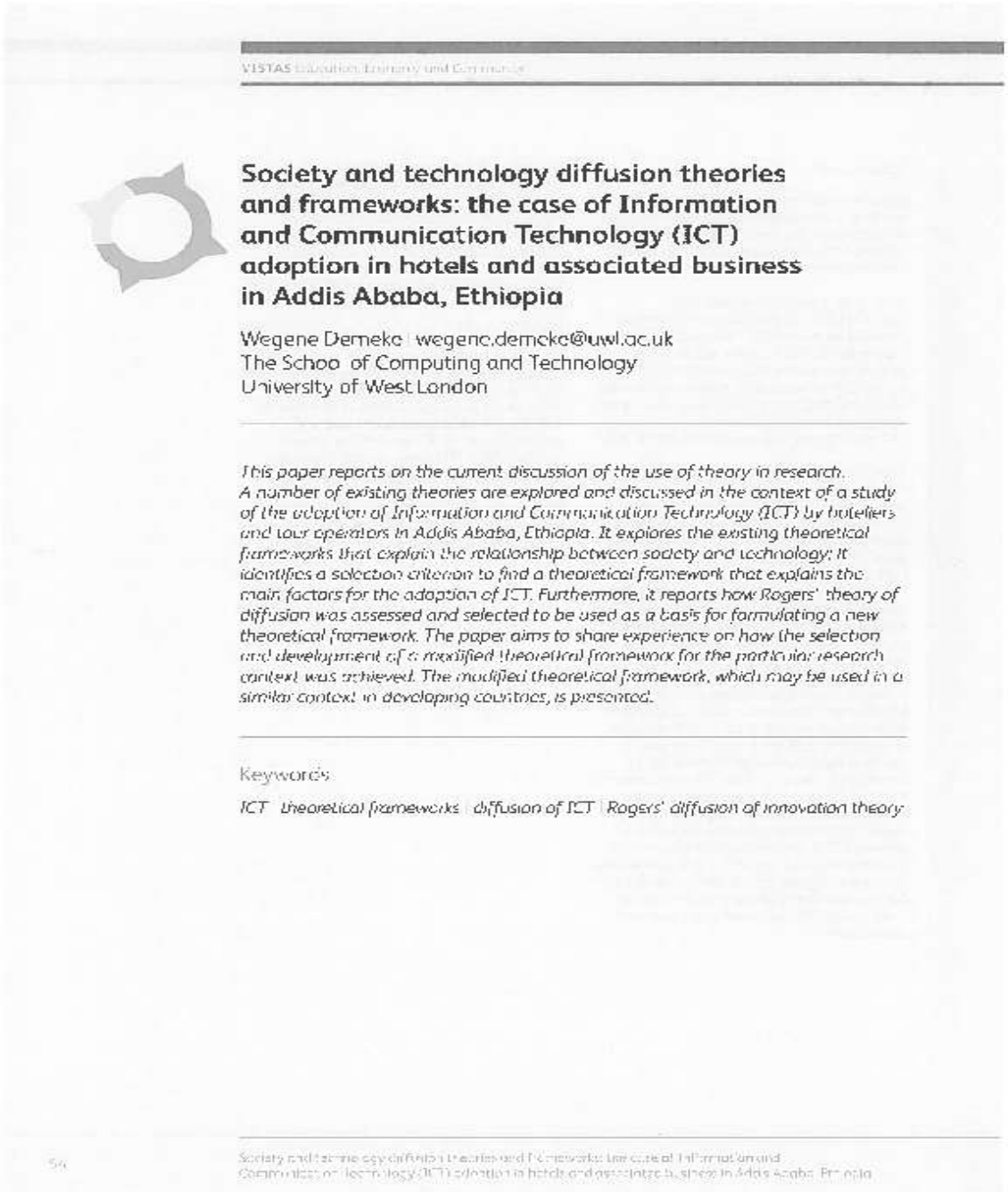
Appendix P Demeke, W. (2012) Society and technology diffusion theories and frameworks: the case of Information and Communication Technology (ICT) adoption in hotels and associated business in Addis Ababa, Ethiopia VISTAS: Education, Economy and Community, 2(2), 7-20



VISTAS Education, Economy and Community

Society and technology diffusion theories and frameworks: the case of Information and Communication Technology (ICT) adoption in hotels and associated business in Addis Ababa, Ethiopia

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This paper reports on the current discussion of the use of theory in research. A number of existing theories are explored and discussed in the context of a study of the adoption of Information and Communication Technology (ICT) by hoteliers and tour operators in Addis Ababa, Ethiopia. It explores the existing theoretical frameworks that explain the relationship between society and technology; it identifies a selection criterion to find a theoretical framework that explains the main factors for the adoption of ICT. Furthermore, it reports how Rogers' theory of diffusion was assessed and selected to be used as a basis for formulating a new theoretical framework. The paper aims to share experience on how the selection and development of a modified theoretical framework for the particular research context was achieved. The modified theoretical framework, which may be used in a similar context in developing countries, is presented.

Keywords

ICT | theoretical frameworks | diffusion of ICT | Rogers' diffusion of innovation theory

Introduction

Many international organisations advocate the role of ICT as a catalyst for development and poverty reduction. The United Nations (UN) recognise this and passed resolution 56/258. The core of this resolution is as follows:

'Recognising that information and communication technologies are among the critical determinants for creating a global knowledge-based economy, accelerating growth, raising competitiveness, promoting sustainable development, eradicating poverty and facilitating the effective integration of all countries into the global economy',
UN general assembly resolution 56/258, 2001

There is no clear way in which ICT can be utilised to bring about development and reduce poverty. The current research discourse on ICT indicates that at least four different emphases are expressed. The first focuses on Gross Domestic Product growth (GDP). Easterly (2006) and Saches (2005) put the emphases on ICT to increase GDP and as a result reduce poverty and increase development. The second emphasis is on ICT to create empowerment for the poor and the disadvantaged to pull themselves out of poverty (Unwin, 2007). The third discourse emphases the capacity of ICT to create a networked society (Castells, 2010) to influence the political and social sphere of society and thus reduce poverty. The fourth emphasis focuses on ICT to create a Gross National Happiness (GNH) (Heeks, 2012). According to Heeks, ICT can create a condition, for example by creating job opportunities for the jobless, to create happiness for the individual. It is important to focus effort on aligning ICT to the particular emphasis so as to realise the potential of ICT. It is wise to note that there may not be one dominant effect. For example the emphasis on GDP can also bring about GNH by creating jobs and work satisfaction.

However, ICT has to be diffused in society to have the desired effects such as generating development, reducing poverty, empowering the poor and the disadvantaged, creating a networked society or to generate a high level of GNH. The diffusion of ICT is increasing in developing countries but the diffusion in Ethiopia is low compared to even the sub-Saharan region.

Ethiopia and current ICT diffusion

Ethiopia is located in north eastern Africa with a population of approximately 90 million. It is a developing country with a high level of poverty: 38 % of the population live below the poverty line. The ICT subscription levels for mobile, internet and other ICT services are very low. The data from ITU below, in table 1, indicate that Ethiopia in 2008 ranked 146 out of 151 countries; this trend continued in 2010 and the rank dropped to148 out of 152 countries indicating that the ICT diffusion is further lagging behind compared to other countries.

Economy	Rank 2010	IDI 2010	Rank 2008	IDI 2008
Senegal	119	2.28	117	1.94
Bhutan	120	2.24	124	1.78
Ghana	121	2.23	118	1.92
Benin	122	2.22	126	1.67
Lao P.D.R.	123	2.21	123	1.81
Kenya	124	2.17	130	1.58
Swaziland	125	2.11	121	1.87
Djibouti	126	2.10	119	2.05
Uzbekistan	127	2.08	125	1.75
Togo	128	2.00	132	1.52
Yemen	129	1.93	131	1.52
Bangladesh	130	1.91	135	1.46
Madagascar	131	1.89	141	1.32
Nigeria	132	1.87	133	1.51
Zimbabwe	133	1.86	149	1.08
Angola	134	1.86	127	1.64
Comoros	135	1.85	140	1.37
Mali	136	1.84	128	1.62
Papua New Guinea	137	1.78	137	1.43
Burkina Faso	138	1.76	129	1.59
Nepal	139	1.75	144	1.26
Guinea	140	1.67	134	1.46
Mozambique	141	1.67	139	1.40
Tanzania	142	1.64	148	1.11
Cameroon	143	1.64	136	1.46
Rwanda	144	1.61	145	1.24
Uganda	145	1.58	147	1.16
Niger	146	1.55	143	1.27
Zambia	147	1.54	138	1.43
Ethiopia	**148**	**1.53**	**146**	**1.23**
Cuba	149	1.39	142	1.28
Congo (Dem. Rep.)	150	1.07	152	0.80
Chad	151	1.03	150	1.01
Eritrea	152	0.87	151	0.87

Table 1: ICT Development Index
(Source: ITU, 2011)

Telecommunication service is growing (table 1). At the end of 2011 there were 6 billion mobile phone subscribers worldwide, 1 billion mobile internet users, 590 million fixed (wired) broadband subscribers, and 2.3 billion people were on line. The growth of mobile phone subscriptions has been driven by the developing countries, which account for 80% of the 660 million new mobile subscribers (ITU, 2012).

The disparities remain high between the developed and the developing countries on mobile broadband subscription: it was 51 % and 8 % respectively at the end of 2011. Fixed (wired) broadband subscription is slowing in the developed world (5%), whereas it is growing at higher level in the developing countries (18%). In developing countries internet growth doubled between 2007 and 2011, but only a quarter of the population have access at the end of 2011.

The growth of mobile phone and internet in the developing countries was remarkable, but if one looks at the data for countries like Ethiopia in the sub-Saharan area the result is disappointing (table 2). At the end of 2011, the proportion of the population of mobile phone users in Kenya was 64.8%, and in Tanzania, it was 55.5%, whereas in Ethiopia it was 16.7 %. A high proportion of individuals living in Kenya (28%) and Tanzania (12%) had access to internet, but in Ethiopia, it was only 1.1 %. The telecommunication sector was liberalised in most of the African countries including Kenya and Tanzania, but the Ethiopian telecommunication authority is the only telecommunication operator providing services in the country.

	% of individuals using the internet		Fixed telephone subscribers per hundred inhabitants		Mobile phone subscription per hundred inhabitants		Percentage of household with computer	
	2010	2011	2010	2011	2010	2011	2010	2011
Ethiopia	0.8	1.1	1.1	1	8.3	16.7	1.4	1.8
Kenya	14	28	0.9	0.7	61.6	64.8	5.6	7.8
Tanzania	11	12	0.4	0.3	46.8	55.5	3.6	4

Table 2: Comparison ICT indicators for selected Sub Saharan countries
(Source: ITU World telecommunication / ICT indicators database)

The Ethiopian telecommunication authority has been struggling to meet the demand for telephone lines for many years. Many thousands of users are still on the waiting list for their first telephone landline service. The data shown below in figure 1 indicate that in 2004 the waiting list was at its maximum (156 963) but was reduced to 13,579 by 2007. It was going up again and reached 18,548 in 2009. The ITU country report of 2002 indicates that the average waiting time for securing a landline was 8 years (ITU, 2012). However, at the same time, the switching capacity, or the number of total telephone lines were 550,000 of which only 340,000 lines (61 %) were used. At the same time, 220,000 lines were idle and many potential customers were waiting for 8 years.

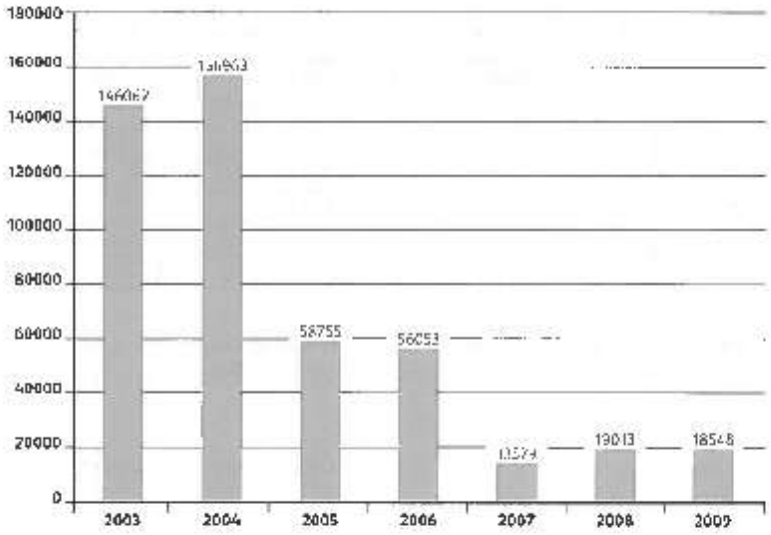

Figure 1: Number of consumers in Ethiopia waiting for a landline
(Source: Ethiopian Telecommunication Authority statistical bulletin 2008/2009)

ICT cost and affordability

The ICT Price Basket (IPB) provides the cost and affordability of ICT services across countries and regions. It is the benchmark comparison measure of the cost of fixed line telephone, mobile phone, and fixed broadband. The comparison prices are given as a the percentage of the average monthly Gross National Income (GNI) per capita.

The IPB data given below in table 3 show that in Ethiopia there was a big reduction of prices for fixed broadband from 906 % to 85 % of the average monthly GNI per capita. However, it is still the most expensive compared with Kenya (57.4 %) and Tanzania (70.8 %). The cost for using mobile phone decreases in both Kenya (from 17.8% to 6.8%) and Tanzania (from 37.1 % to 22.9%) whereas it increases in Ethiopia from 12.6 % to 13% of the average monthly GNI per capita.

Countries	IPB		Fixed telephone sub-basket as a % of GNI per capita		Mobile phone sub-basket as a % of GNI per capita		Fixed broadband sub-basket as a % of GNI per capita		GNI per capita, USD, 2010 or latest available year
	2011	2010	2011	2010	2011	2010	2011	2010	
Ethiopia	33.8	38.5	3.4	3	13	12.6	85	906	390
Kenya	28.6	32.3	21.5	21.5	6.8	17.8	57.4	57.6	790
Tanzania	39.7	44.4	25.5	25.5	22.9	37.1	70.8	70.8	530

Table 3: ICT Prices comparisons table for Ethiopia, Kenya, and Tanzania
(Source: ITU. GNI and PPP USD ($) values are based on World Bank Data)

Methodology

A series of field visits to Addis Ababa were conducted to collect data from hoteliers and tour operators. In the first phase, detailed interviews were conducted with 17 hoteliers. In the second phase, a survey was conducted with 128 hoteliers and 57 tour operators. This paper is based on a doctoral research, which is not yet published. It is focused on how the choice of an appropriate theory was selected and adopted to support the research context. A series of difficulties were encountered before and during data collection. Lessons learned from this show the need to be sensitive to the local context and ethical issues (Demeke and Olden, 2012)

An exploratory design methodology is used to inform the research process. The research design uses Berg's Spiralling Research Approach (figure 2) using a forward and backward movement of processes in each research stage: for example, from idea, to theory, and back again; from theory to modify the idea; or from design, to data collection or vice-versa, from analysis to dissemination and so forth (Berg, 2007). The process, in its formulation provides a refining of ideas, theories, method, data collection, analysis, and dissemination. In this particular research, the method enables the proposal of the theoretical framework that guides the data collection, analysis, and dissemination of the research.

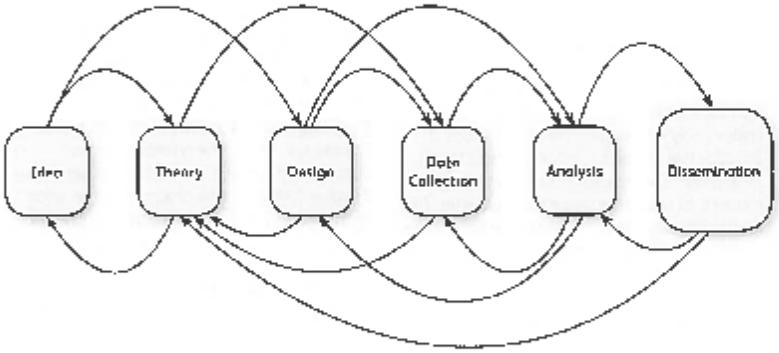

Figure 2: The Spiralling Research Approach adopted from Berg

Do we need a theory?

Some researchers argued against using a theory for a number of reasons. For example, John Van Maanen has argued that more descriptive narratives, based on intensive ethnographic study are appropriate to build knowledge, where later a theory can be developed (Van Maanen, 1995); he suggested a ten-year moratorium on theoretical papers. The implication of this argument is that theory should not be rejected in a research for the sake of it.

Again, Baker and Thyer critiqued on PhD program requiring students to use a theoretical framework for their study, even when the study has not been guided by any explicit theory or tested in the outcome of the research (Baker and Thyer 2008). Other researchers emphasise the importance of accumulation of empirical findings as more important than trying to generalise in a theorised framework. For example, Flyvbjerg (2006) in his article by arguing that social science cannot produce universal context independent theory, but it offers concrete context dependent knowledge (Flyvbjerg, 2006). Similarly, Cooley and Lury argued that a case study is applicable to critique change of development policy in developing countries rather than a generalised on of science (Cooley and Lury, 1982).

This paper is not aiming to put forward an argument on the importance of theory against the accumulation of case study knowledge, particularly in the case of diffusion studies in the developing countries. But it does report on how existing theories can be selected and adapted to fit in the particular research context and it tries to formulate a theoretical framework based on the existing Rogers' diffusion of innovation theory. It emphases that the Political, Economic, Social, Technological, Environmental and Legal (PESTEL) factors affect the diffusion of ICT in the hotels and tour operators businesses

The role of theory in research: why does it matter?

Strauss argued that the role of a theory is to provide the key variables of the phenomena under study with underlying assumptions; it provides the research method (Strauss,1995). In addition, Strauss explains that a theory is a model that tries to replicate the real world. The real world is far more complicated and theories make sense of it by simplifying and reducing it to the most important factors.

The advantages of explicitly stating the theoretical foundation used in a research is to contribute to the verification of the theory from the particular angle of the investigation. Alternatively, if not verification it generates falsification of the theory as argued by Popper (1963). In addition, the theory can be used by different disciplines to investigate a phenomenon which the theory was not developed for. However researchers do not necessarily specify the theory that guides the research; it may be implicit in the work. Furthermore, Weick argues against a tolerant or an implicit use of theory, it deters understanding, and he compares it to blind spots (Weick,1985).

A theory is described by Brunswik's 'Lens Model' as adopted by Amundsen and Cummings as shown below in figure 3. The model indicates that the 'lens' consists of Xs selected by the observer, taken to be the independent variables (Amundsen and Cummings, 1997). The phenomenon is indicated as Y, and 'i' is the Xs which determine its value. The selection of Xs affect the result of the study. The 'lens' is acting as a filter, to select what is considered to be the significant factor or factors that explain and predict about the nature of the phenomenon under investigation. The 'lens' metaphor can also be taken to reflect the context in which the investigation is conducted where there are for different contexts, different variables appearing to the observer to investigate the object under investigation.

The advantage of a theory is that it answers the queries of why, it explains and predicts a phenomenon, furthermore theory matters greatly as it lends itself to be used in a variety of contexts. It is used in a variety of disciplines. For example, Rogers' theory of innovation has been used to study diffusion in health, education, information systems, and marketing to name a few.

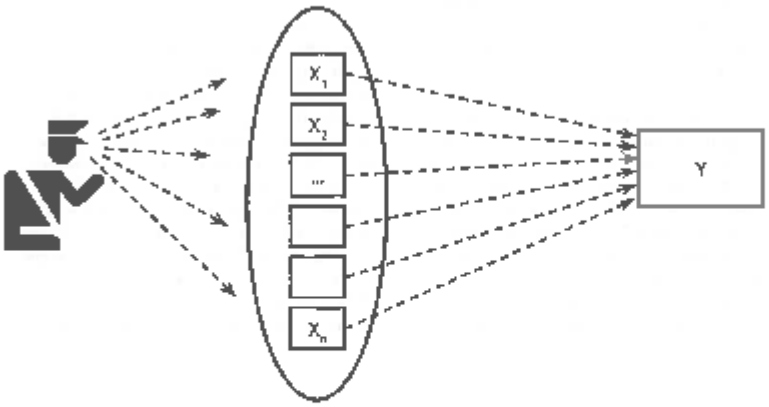

Figure 3: Brunswik's Lens model adopted and presented by Amundson and Cummings

In conclusion, using theory in research is beneficial when it is appropriate and fitting for the particular research context. It contributes to knowledge and also tests the existing theories or generates a new theory that fits the context and the phenomenon under consideration.

Theories on society, science, and technology

One of the primary bodies of literature that examines the mutual interaction of society and science is the sociology of science. This is the study of science and its effects on the social structures and processes of scientific activity (Ben David, 1978). It focuses on how science as an institution locks into the practices and ways of the given paths and rewards for the practitioners in the field (Pinch and Bijker,1987).

According to Pinch and Bijker one of the main developments of the sociology of science is the extension of the sociology of knowledge into 'hard science'. One of main characteristics of sociology of knowledge is that scientific knowledge is socially constructed: this by its very nature provides multiple interpretations for the same phenomenon. Sociology of science investigates the cause of beliefs in society irrespective of the scientific claims of truth. The central tenet of different explanations are not sought for what is known to be scientific 'truth' and as it is indifferent to the truth or falsity of the belief. This is an issue of socially constructed beliefs, not an epistemological issue.

Social history of technology

The social history of technology is part of the study of the sociology of science. It investigates the interaction of technology and society based on the historical accounts. These technological systems include electricity generation/transmission and telecommunications infrastructures. According to Hughes (1987) these systems are the result of the integration of technical, social, economic, and political elements in a society. Furthermore, Hughes argues that these technological infrastructures require physical artefacts, organisations, scientific components, and legislative artefacts to evolve. Here Hughes, clearly shows that in the adoption of large infrastructures the context, the politics, social law, technology and organisations all have to come together for the realisation of these infrastructures. This implies that the PESTEL factors play a pivotal role in the realisation of these projects. However, this theoretical framework is not completely applicable to what is happening at the moment regarding the diffusion of ICT. Even so, the PESTEL factors which have impacted on past diffusion continue to influence on the diffusion of large technological infrastructures.

The social history of technology tends to delineate the technology system apart from the environment in which it exists. The central tenet of the social history of technology lies in the fact that it deals with how the technology is reconstructed by society and how the society is changed because of technology, focusing the relationship between the technology and the society. However, other major factors such as the political, economic, environmental, and legal factors also shape the relationship between the society and technology.

Society and technology

Technology is taken to be a force of change especially in the area of the social, cultural, and economical situation in society. The impact of technology, particularly in the industrial revolution has been extensively documented. Technology has three layers of meanings (MacKenzie, 1985). The first is the artefact itself, for example, cars or planes. Second, it also includes the human activity or process such as driving or flying, without this activity the car is a collection of metal, glass and wire. Third, technology also refers to what people know and do with it. The knowledge to make a car is a technology. As technology is artefact, knowledge and activity, then it can be argued that the artefact is developed by knowledge, human activity and non human agents. In the final analysis, technology is a result of interaction of human actors and material substance.

The effects of the introduction of technology on productivity and competitiveness are well documented. Introduction of new machine driven technology or fully automated systems on the factory floor means fewer workers. This increases unemployment and changes other social, economic and cultural parameters. The worker's salary may be reduced and poverty may be on the increase followed by other social ills. On the positive note, increase of productivity allows the worker to have more time to pursue other activities and also give them leisure time.

In other words technical changes bring about social changes. Moreover, as Peter Lange points out the social change that comes because of the microchip amounts to changes in the social configuration of the society and it changes the cultural, economic, and social styles of the society (Lange 1990). It increases the productivity of the workforce, accordingly workers have ample leisure time.

The development and progress of technology can be self perpetuating, irrespective of the social elements. It can be assumed that technology follows a path determined by its physical nature. Equally it is affected by social, cultural, and economic factors. The engineers and technologists, who design these artefacts, are part of a certain social group hence the implication is that there is in its creation, at least, the prospect of the artefact being influenced by the social group. Furthermore, as MacKenzie (1985) defines technology as a social activity of the society that uses tacit knowledge or the creation process of knowledge to enable the creation of the artefact itself. Overall technology creation is the result of multiple factors, such as the social, economic, and cultural.

Mumford argues that technology not only shapes the society but it is also shaped by the society (Mumford, 1967). In addition, there are socio cultural conditions that precede the development of new technologies. He further argues that technology has an impact on society. Furthermore, it is found that the technology was cleansed. Winner coined the phrase 'Do Artefacts have politics?' He shows, on one of his examples, that the bridge which crosses over a park enables the upper and middle class car owners to use the park, but it creates a barrier to lower class people non-car owners who travel by bus. Because of the height limitation of the bridge, buses are not allowed to pass under the bridge creating a physical barrier to exclude lower class sections of the society (Winner, 1986).

The above argument demonstrates that artefacts do have a political dimension. Furthermore, technology is also socially shaped as shown by Mumford. In addition, MacKenzie (1985) argues that technology does not develop exclusively following its own way of momentum, but is shaped by social factors, what Mackenzie call 'socio-technical ensembles'.

Social Construction of Technology (SCOT)

The central tenets of SCOT are: first, it advocates the mutual shaping of society and technology, the social construction of artefacts by relevant social groups and the technological shaping of society. Second, different social groups can provide different meanings and attributes to the same artefact. Third, artefacts do not have inherent identity or attributes (Pinch and Bijker, 1984).

SCOT shares its interpretive flexibility with the sociology of science; it focuses on the problem, real or assumed, generated by artefacts for selected social groups, the social influence and input in the design of the artefacts. This influence is non-linear in its nature. The artefact shapes the selected social groups. Hence, the relationship between the society and technology is multi-dimensional. In addition, it focuses on a problem that arises because an artefact is created for a selected social group. The main assumption is that the members of the selected social group share common meanings in respect of the same artefacts. The underpinning methodological and empirical studies for SCOT focus on the discovery, naming, understanding and describing of the relationship between the selected social group and the artefact. Furthermore, different social groups provide many interpretive ideas for the same artefact as opposing interpretations are tolerated.

The closure and stabilization of an artefact occurs when there is certain degree of consensus achieved among the selected social groups about the artefact's meaning, understanding, naming and when a solution is found for the initial problem identified. In reality, the problem may not need to be solved. However, if the selected social groups see the problem as being solved, then the artefact is stabilized. Furthermore, the perception or assumption by the selected social group, induced by external agents may indicate or assume the problem is solved, then the artefact is stabilised. Advertisement plays a significant role in shaping the meaning of the artefact for the selected social group, shaping, and influencing the selected social group to accept the solution that has been found for the problem. This consensus may not be achieved for all social groups in the society. Bijker and Law propose the concept of 'technological frame' to explain this gradient of consensus for different social groups for the same artefacts and this forms the development of heterogeneous socio-technical ensembles (Bijker and Law, 1992). This enables SCOT to generalise beyond a single case study to form a theory of socio-technical ensembles. On the other hand, this closure forms part of the future norms and values of the society.

There are inherent problematic issues with SCOT: it requires defining a social group for its study. Furthermore, there is an assumption that the selected social groups share similar meanings and understandings for the same artefact. In these ideal settings, two different individuals in the selected social group have the same idea and give the same meanings to an artefact. But can there be an absolute closure for an artefact in the sense that closure brings consensus about the meaning of the artefact by certain social groups? Consensus reduces interpretive flexibility, but this is not necessarily true for all social groups. Closure may seem to bring social solution to the artefact, which describes the continuity of the artefact. At the same time, technological change in the artefact brings new interpretations. This shows how SCOT defines the dynamic nature of change and continuity.

Technological frames form the basis for analysing sociotechnical ensembles. It is the method of how technology facilitates interaction and shapes specific cultures. It is a two way process, which looks at how new technology is constructed by allowing and restricting interactions within specific social groups in certain channels.

This theory considers the effects of the interaction of culture and technology in isolation, though there are other factors that influence this interaction. For example, the political, economic, environmental, cultural and legal factors play a significant role in shaping the interaction between the socio-culture and the technology. The data gathered for the research on which this paper is based indicates that the political decision to run a monopolistic system for telecommunication services has resulted in unsatisfied high demand for telephone lines with very poor services for the customers. Furthermore, with no consumer protection, av

and on choices to switch to other suppliers, customers are left with no option but to accept subsistence services. This in turn tends to influence the culture to accept substandard services.

Technology Acceptance Model (TAM)

The behaviour of users in accepting and using a new technology is measured using the technology acceptance model (TAM). This is an information systems theory which is an extension of Theory of Reasoned Action (TRA). Bagozzi and Davis argue that users accept and use new technology based on two measures: perceived usefulness and perceived ease of use (Bagozzi et al. 1992). The advantage of this measure is its simplicity. The technology can have a multitude of capabilities, but this is useful only if the users perceive that it is useful for their job. However the major criticisms are that the theory offers limited explanatory and predictive power to give it practical value.

Actor Network Theory (ANT)

Actor-network theory was formulated on the basis of the work of Callon (1986), Latour (1980, 1987), and Law and Hassard (1999) and appears to share a number of attributes with SCOT particularly on the mutual interaction and construction of society, technology, and science. However, ANT is very different in its fundamental approaches, especially in its human and non-human entities relationship.

SCOT takes a constructivist approach, where nature and reality are constructed through the mutual interaction of technology, science and society. In comparison, Actor Network Theory recognises the existence of reality outside and independent of society and humans, which cannot be changed. However much cannot be said about nature without the participation and activities of humans. In this relationship, humans and non-human entities are defined on the relationship they form in the network.

When the interaction between humans and nature takes place, a relationship forms among humans and things, and humans and other humans; this forms a network. Each network has its configuration and relationship to other networks. It also defines the meaning, role and identity of the elements within it. It is in this setting that truth, meaning and understanding is defined for that particular network. This truth, meaning and understanding can be different for different networks. It is a version of reality for that network. In this setting no one can claim to have an independent reference point outside any network. The assertion, 'Water boils at 100°C', has a dual character of nature, characteristics and the human formation of concepts, measurements, tools and so on. It is not possible to say anything about this phenomenon without the human interaction, the technology and the science. The statement 'water boils at 212°F', even though this statement and the above assertion are similar, the latter statement has a different configuration of tools and network. This example shows that the construction of reality can be different for different networks.

The notion of object and subject is not separated in Actor Network Theory; objects are defined by their relationships with other objects. In this myriad of relationships, the role, value and attributes of the elements are determined based on the position they assume in the network. The object without its connection and association to other objects has no role, value or attribute. This extends to humans and non-human entities. As Law points out (Law and Hassard,1999 p.3):

'Actor Network Theory is a ruthless application of semiotics. It tells that entities take their form and acquire their attributes as result of their relations with other entities. In this scheme of things entities have no inherent qualities. essentialist divisions are thrown on the bonfire of the dualisms: truth and falsehood, large and small, agency and structure, human and non-human, before and after, knowledge and power, context and content, materiality and sociality, activity and passivity, in one way or another.'

ANT studies how science and technology integrate into society, how these intricate interactions of technology and society stabilise, and how these interactions create networks of human and non-human agents and waves of relationships among entities. ANT is a social theory and a study of science and technology (SST). Its fundamental tenets are that reality exists outside the human; it is firmly based on its philosophical and epistemological foundation on the concept of networks and

actors. It particularly focuses on the processes through which humans and technology form heterogeneous networks. It is also different to other SST approaches especially for its material-semiotic stance. ANT explores how networks of human and non-human entities are created, sustained or disintegrated. It does not investigate why networks are generated but it explores how the network is sustained or disintegrated.

The conceptual framework provides the foundations to select models and tools to enable systematic ways of gathering data and to choose appropriate tools that are required to transform these data into information and knowledge. Furthermore, Latour summed this up in the following passage (Latour, 1987 p 277):

'The history of science is that of the many clever means to transform what ever people do, sell and buy into something that can be modified gathered, archived, coded, recalculated, and displayed'.

ANT argues that all actors are of equal importance, human or non-human, powerful or powerless. It is true that all actors contribute to the network in some level but actors that have significant power in the network play a critical role compared to those with less power. As Wa shorn points out, ANT has a disregard for the existing social order (Wa shorn, 1997)

Rogers' theory of diffusion of innovation

The availability of ICT has increased and the price of these tools decreases all the time. In spite of the potential advantages and use of ICT, the adoption is not encouraging particularly in a country like Ethiopia. Opposition to the adoption of ICT may come from different levels. At the organisational level, opponents to the adoption of ICT perceive the advantage and use of ICT differently to the adopters. Other opponents include users who use rival technology, or individuals who reject ICT on grounds such as health or safety issues, who in general consider it not fit for purpose objectives at the personal level.

Diffusion of innovation is influenced by the innovation, and the means by which the idea is communicated through channels of communication, time, and the social system (Rogers, 2003). The ICT diffusion in the beta spectre influenced by these four factors progresses through the five stages as shown below: Knowledge, Persuasion, Decision, Implementation, and Confirmation.

At the beginning of the diffusion processes, Rogers explains that when the potential adopter is introduced to an innovation and gains some level of understanding, it can be termed the knowledge stage. The second stage occurs when an individual received

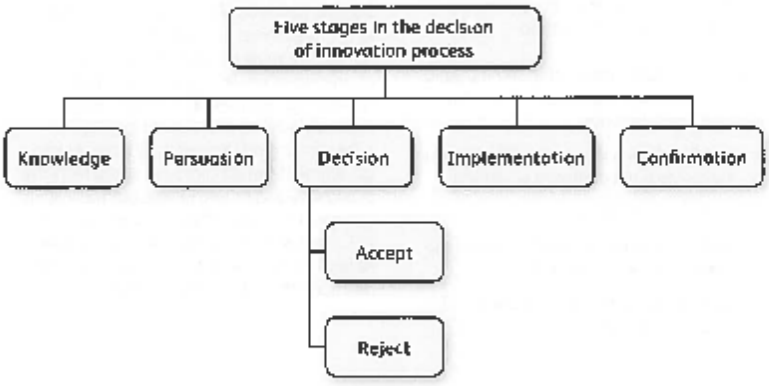

Figure 4: Rogers' innovation-decision process

an opinion for or against to adopt or reject the innovation. This is the persuasion stage where the knowledge and understanding combined with the opinion of others convince the adoption or rejection of the innovation. Once an individual has decided to adopt an innovation and put the innovation into use, it signals the implementation level. The confirmation stage is the continuation of the adoption or rejection of the innovation.

The speed at which individuals accept an innovation varies, some adopt at first, while some lag behind. The adoption of an innovation follows an S curve when plotted over a length of time. Rogers recommends five categories of adopters: innovators, early adopters, early majority, late majority, and laggards. Rogers also identified five factors that influence the adoption of innovation by individuals: relative advantages of the innovation, compatibility, complexity or simplicity, trialability and observability.

Selection of theoretical framework

In the study of the diffusion of innovation researchers have many theories at their disposal, but there are difficulties in choosing the appropriate theory for the proposed research. The properly selected theory enables the formulation of the research constructs. Although the selection of research method depends on the nature of the problem under investigation, the selected theory has an impact on the research method.

Truex et al. (2006) formulated some criteria how to choose the appropriate theory for research which includes:

1. best fit between the selected theory and the research phenomenon of interest
2. the theory's historical context
3. the impact of the selected theory on the choice of research method
4. considering the theorising process and the cumulative theory.

Reasons for the adoption of Rogers' diffusion of innovation theory

Rogers's diffusion of innovation theory explains how an innovation is diffused in a society. It focuses on the individual adopter and the influence of the culture on the adopter to accept or reject an innovation. Looking closely at Rogers' diffusion of innovation theory and the problem under investigation, which this paper is based on, shows that the theory is a good fit for the research phenomenon under investigation in two ways. Firstly, the theory explains how the individual adopter goes through the five stages of adoption processes to adopt ICT in their hotels and tour operators businesses. Secondly, the five factors of innovation adoption identified by the theory at least partially affect the diffusion processes. In addition, the theory is widely used in diffusion studies in various academic fields such as politics, economics, and information systems. Furthermore, recently its use in diffusion studies in Africa (Kiplang'at and Onsando, 2005; Minishi-Majanja and Kiplang'at, 2005) indicates its appropriateness for this research.

However, the theory does not explain the macro PESTEL factors that affect the diffusion of ICT. The main factor for this shortcoming of the theory lies in its historical context: it was developed in a different socio-economic context compared to the research that this paper is based on. The theory was developed in the free market economy where market forces determine the availability and price of an innovation. Whereas, for example in developing countries like Ethiopia, where political decisions are taken to run the telecommunication services by a monopoly government owned company, this directly affects the availability and pricing of telecommunication services. This in turn affects the diffusion of ICT in hotels and tour operators businesses. At least in the case of this research, political decision affects the diffusion of ICT.

Proposed new theoretical framework

Rogers' diffusion of innovation theory focuses on the user, and the influence of the culture on the adoption of an innovation. However, the data collected from Addis Ababa and from secondary data analysis leads to the conclusion that there are resistance diffusion agents caused by the PESTEL factors. Hence, individuals or organisations overall face diffusion resistance agents and diffusion facilitator agents. To include the main factors that affect diffusion, both resistance and facilitator agents caused by the PESTEL factors should be included in the theoretical framework. The researcher proposes to add two elements to Rogers' diffusion of innovation theory, namely, diffusion facilitator and diffusion resistance agents caused by the PESTEL factors. This will shed light on how the macro factors in PESTEL act as facilitators or resistance agents, which go on to influence adopters and non-adopters.

The results of the balance of power between the facilitator and resistance agents creates the condition in the social system for the acceptance or rejection of the innovation for the particular social group. Diffusion facilitator and resistance agents affect different social groups differently. This shows that diffusion is a complex process. Furthermore, change in socio-economic conditions can result in change of the role of facilitators and resistance agents, which may result in resistance agents becoming facilitators or vice versa. Diffusion of innovation is a dynamic phenomenon. The diffused or rejected innovation also has an influence to change the facilitator and resistance agents.

The findings from the research indicate that the Ethiopian government's decision not to liberalise the telecommunication sector is a political decision that has resulted in the dominance of a single government owned telecommunication operator. The operator is unable to satisfy the demand for telephone services resulting in low-levels of adoption rate. This policy is a diffusion resistance agent affecting organisations and individuals and hindering the adoption of ICT.

Furthermore, the economic policy of a 40 % import tax on ICT equipment in addition to the 35 % inflation rate has resulted in a very high level of ICT price. This policy has created another resistance agent for the diffusion of ICT for almost all social groups except a few rich individuals. These two resistance agents have created very expensive ICT services for example, wired broadband services at the end of 2011 costs 85 % of the monthly GNI per capita. This indicates that the two main policy factors arising from the political and economic conditions are the two main factors for non-adoption of ICT.

Other diffusion resistance agents include a lack of legal protection for small hotels renting properties from the government housing agency. The agency has the power to evict the tenants in two weeks without any notice. All minor technical modifications including installing a socket require permission from the housing agency. Furthermore, there is no guarantee on the length of tenancy that a hotel can operate in the premises. Many hoteliers stated that this is very restrictive condition for the adoption of ICT system. The lack of legal protection is another resistance agent for certain social groups.

In addition other resistance agents affect adoption of ICT for different social groups such as gender, age, education may arise arising from underlying social issues. The proposed theoretical framework shown in figure 5 below includes the PESTEL factors as a source of diffusion resistance and facilitator agents in the diffusion processes for the particular study. In this particular study the Political, Economic, Social, Technological and Legal factors generate diffusion resistance and diffusion facilitator agents. But, no evidence has been found for Environmental factors for that generate resistance and diffusion agents. For the research requires us to look if the theoretical framework is appropriate for the study of diffusion study in the developing countries.

The proposed model will guide future researches to identify resistance and diffusion agents and the degree and power of influence they impose on the adoption processes. Furthermore, identifying these agents may indicate the PESTEL factors that influence the policies and further adjustment or change of these policies may result in the desired adoption or rejection of innovation.

Conclusion

In this paper various theoretical frameworks have been discussed and theories on the adoption of innovation in a particular society for technology in general are explored. The importance of theory was discussed, and the argument for research in discovering knowledge without a theoretical framework was also presented. Using theory to ground research helps to understand the underlying assumption of the theory but also checks if the underlying context is fit and appropriate to the chosen theoretical assumption. Furthermore, it focuses the research to investigate what are considered as the important or detrimental factors stated by the theory.

In this part of our research Rogers' diffusion of innovation theory was selected to be appropriate but it is limited in the underlying assumptions in which the context of diffusion is happening. To enable the theory to describe the underlying assumption Rogers' theory was modified to include the PESTEL factors that influence the diffusion of ICT in Addis Ababa. The findings of the study also confirm the role of PESTEL factors for the diffusion of innovation of ICT in the hotel and tour operators sector in Addis Ababa. The proposed modified Rogers' diffusion theory will help other researchers to use the method to explore how the theory is adopted to the research context and so help other researchers to use it for the study of diffusion.

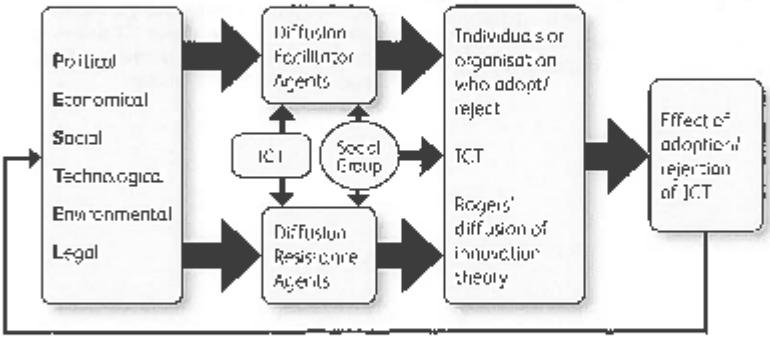

Figure 5: Proposed theoretical framework for diffusion study

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Society and technology diffusion: a case of information and communication technology (ICT) adoption in hotels in Addis Ababa, Ethiopia

Appendix Q Demeke, W. (2014) adoption of information and communication technologies in the hotel and associated businesses in Addis Ababa, Ethiopia, IADIS conference, 28 February- 2 March 2014, Madrid, Spain

ADOPTION OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN THE HOTEL AND ASSOCIATED BUSINESSES IN ADDIS ABABA, ETHIOPIA

Wegene Demeke
School of Computing and Technology - University of West London, London, UK

ABSTRACT

Many international organisations assert that Information and Communication Technologies (ICTs) play an important role as a facilitator and as one of the critical determinants for economic growth and poverty reductions in the developing countries. For ICT to be effective for development and poverty reduction, first it needs to be diffused in the developing countries. The data from International Telecommunication Union (ITU) indicate that there is very low diffusion in Ethiopia. This research attempts to find the socio-economic factors that affect the adoption of ICT in the hotel and associated businesses in Addis Ababa, Ethiopia. In this research, mixed method research methodology used to collect qualitative and quantitative data in two phases. In the first phase, semi-structured interviews were used to collect data from hoteliers (n=17). In the second phase structured questionnaires were used to collect data from hoteliers (n=138) and tour operators (n=58). This paper seeks to explore the facilitator and resistance factors that determine the adoption of ICT in the hotels and tour operator businesses. The study investigated the factors that influence both the adopters and non-adopters of ICT. It uses Rogers' diffusion of innovation theory to formulate a new theoretical framework to guide the study. Furthermore, the study results indicate that the Political, Economic, Social, Technological, and Legal factors play a critical role in the adoption of ICT in the sector. It goes on to present the proposed theoretical framework, based on Rogers' diffusion of innovation theory, which may be used in a similar context in the developing countries. The theoretical framework provides insight into the factors of the adoption/rejection of ICTs for various sectors of the economy in the developing countries.

KEYWORDS

ICT; diffusion theory; developing countries; diffusion facilitator and resistance agents

1. BACKGROUND

Ethiopia is located in the northeast of Africa with estimated population of 90 million. Though the country is known for famine and draught in recent years, it has a long history, rich culture and languages. It is a developing country ranked 174 out of 187 countries in the United Nation Development Report (UNDP) of 2011(UNDP 2011).

Ethiopia's economy is mainly based on agriculture; it contributes 47.7 % of GDP and 85 % of the total employment in the country. The major agricultural export are: Coffee, leather, hides and skins, oilseeds, pulses and recently Khat[1] is another export to neighbouring countries of Djibouti, and Yemen. The industry contribution amounts to 19.2 % of GDP, while the service sector contributes 38 % of the GDP. The contribution of the ICT sector relatively remains very small. According to the World Bank, ICT's contribution to GDP is less than 2%.

According to Adam (2007), the problems that are faced by the country are extremely challenging. Some of the major challenges are the increasing population growth, low level productivity, inadequate educational and work standards, unreliable rainfall and being land-locked pose a huge challenges not comparable anywhere else.

[1] Khat is a plant chewed in east African countries Somalia, Djibouti, Ethiopia, Kenya, and Yemen, it has a stimulating effect

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Ethiopian Telecommunication Corporation (ETC) is one of the oldest public telecommunication operators in Africa. Telecommunication services started in Ethiopia in 1894. The telecommunication sector was liberalised for most of the African countries including Kenya and Tanzania, but Ethiopia is among the very few countries in the world that maintain restriction on Foreign Direct Investment (FDI) in the telecommunication sector.

The ICT subscription levels for mobile, Broadband and services are very low. The data from ITU indicate that Ethiopia in 2008 ranked 146 out of 151 countries; in 2010 the rank dropped to148 out of 152 countries indicating that the ICT diffusion is further lagging behind compared to other countries. The ETC has been struggling to meet the demand for telephone lines for many years. Many thousands of users are still on the waiting list for their first telephone landline service. The data shown below in Figure 1 indicate that in 2004 the waiting list was at its maximum (156,963) but was reduced to 13,579 by 2007. It was going up again and reached 18,548 in 2009. The ITU(2002) country report of 2002 indicates that the average waiting time for securing a landline was 8 years However, at the same time, the switching capacity, or the number of total telephone lines were 550,000 of which only 340,000 lines (61%) were used. At the same time, 220.000 lines were idle and many potential customers were waiting for 8 years.

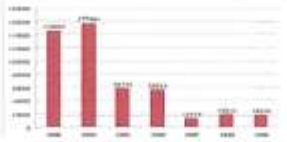

Figure 1. Number of consumers waiting for a landline (Source: Ethiopian Telecommunication Authority statistical bulletin 2008/2009)

The ICT Price Basket (IPB) provides the cost and affordability of ICT services across countries and regions. It is the benchmark comparison measure of the cost of fixed line telephone, mobile phone, and fixed broadband. The comparison prices are given as a percentage of the average monthly Gross National Income (GNI) per capita (ITU 2012). The IPB data show that, between 2010 and 2011, in Ethiopia there was a big reduction of price for a fixed broadband from 906 % to 85 % of the average monthly GNI per capita. However, it is still the most expensive compared with Kenya (57.4 %) and Tanzania (70.8 %).

Ethiopian Telecommunication Agency (ETA) is the telecommunication regulatory body. ETA main responsibility is to regulate the monopoly operator. Both, ETA and ETC are accountable to the Ministry of Transport and Communication. The regulator is weak and lack independence. Furthermore, according to Adam (2007), effective and legitimate regulation cannot be achieved without competition.

2. INTRODUCTION

To reduce extreme poverty and bring about development in the developing countries, UN and other international agencies argued that ICTs availability and access in the developing countries play a critical role in achieving economic growth and reduction of poverty. There are many initiatives taken by these international organisations focusing on ICTs' ability to create enabling condition in the developing countries, for example, UN resolution 56/258 stated that:

"Recognising that information and communication technologies are among the critical determinants for creating a global knowledge-based economy, accelerating growth, raising competitiveness, promoting sustainable development, eradicating poverty and facilitating the effective integration of all countries into the global economy"

UN general assembly resolution 56/258, 2001

Furthermore, the United Nations General Assembly endorsed the Word Summit on the Information Society (WSIS) on 21 December 2001 by resolution 56/183. One of the WSIS's declarations of principles is stated as;

"to build a people –centred, inclusive and development-oriented Information Society, where everyone can create, access, utilize, and share information and knowledge, enabling individuals, communities and peoples to achieve their full potential in promoting their sustainable development and improving their quality of life"(ITU 2003).

However, ICT has to be diffused in society to have the desired effects such as generating development, reducing poverty, empowering the poor and the disadvantaged. The diffusion of ICT is increasing in developing countries but the diffusion in Ethiopia is low compared to even the sub-Saharan region. The major barriers for the adoption of ICTs are poor infrastructure, finance and capacity-related problems (Karanasios & Burgess 2008) and the size of an organisation, the smaller the organisation then it is unlikely it will adopt ICT (Cudonov et al. 2010).

Other researchers argued that organisations adopt technology because of perceived benefit of the technology, readiness of the organisation to accept innovation and the external pressure arising from competitive or customer demands. For example, Mehrtens et al. (2001) argues that perceived benefit, organisational readiness and external pressure are the three important factors that affect the adoption of internet by Small and Medium Enterprises (SMEs).

Chacko and Harries (2006) argue that barriers such as inadequate information, affordability and lack of knowledge have negative impact on adoption of ICT. Furthermore, to tackle these barriers and facilitate adoption, policies on ICT should encompass areas such as infrastructure, legal education, trade and investments. In addition, government policies on ICT should be coherent and comprehensive to enable SMEs' to adopt and use ICT which is available, affordable and practical to make them part of the knowledge economy.

3. ROGERS' THEORY OF DIFFUSION OF INNOVATION

The availability of ICT has increased and the price of these tools decreases all the time. In spite of ICT's potential advantages and wide spread use, the adoption of ICT is not encouraging in countries like Ethiopia. The macro condition plays a critical role in determining ICT's availability and the context in which the individual is influenced to adopt or reject the innovation. The context in which the adoption is taking place mainly determined by the Political, Economic, Social, Cultural, Technological, Environmental and Legal (PESCTEL) factors that in turn determines the effects on individuals, organisation and on social groups that adopt or reject ICT.

Diffusion of innovation is influenced by the innovation, and the means by which the idea is communicated, channels of communication, time, and the social system (Rogers 2003). The ICT diffusion in the hotel sector influenced by these four factors progress through the five stages, as shown below, Knowledge, Persuasion, Decision, Implementation, and Confirmation.

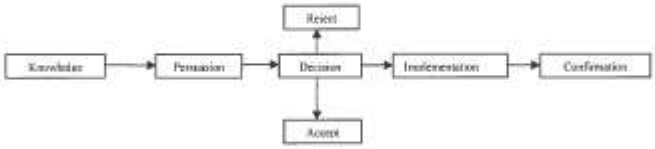

Figure 2. Rogers' innovation-decision process

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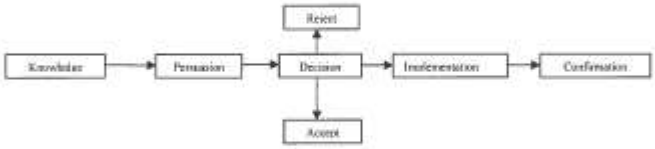

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What is more is that adoption and non-adoption of a technology is a complex process, not only the macro and micro factors play a significant role, but also the interaction among the adopters and non-adopters have an important role. To understand the adoption and the non-adoption of innovation it is essential to understand the micro and macro context.

3.2 Theoretical Framework Development

The resultant of the balance of power between the facilitator and resistance agents creates the condition in the social system for the acceptance or rejection of an innovation for the particular social group. Diffusion facilitator and resistance agents affect different social group differently. Furthermore, change in socio-economic conditions can result in the change of the role of facilitators and resistance agents, which may result in resistance agents that are becoming facilitators or vice versa. Diffusion of innovation is a dynamic phenomenon: the diffused or rejected innovation also has an influence to change the facilitator and resistant agents.

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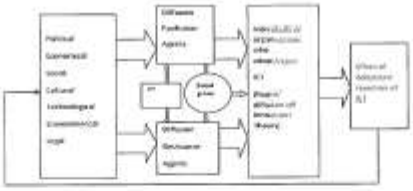

Figure 3. Proposed Diffusion framework based on Rogers' diffusion model

The proposed model will guide future researchers to identify resistance and diffusion agents and the degree and power of influence they impose on the adoption processes. Furthermore, identifying these agents and the PESCTEL source they arises provide policy makers a tool to bring about policies change or amendment to facilitate adoption.

4. RESEARCH METHOD

A series of field visits to Addis Ababa were conducted to collect data from Hoteliers and tour operators. This research used mixed methodology to collect data in two phases. In the first phase, detailed interviews were conducted with 17 hoteliers. In the second phase, a survey was conducted with 128 hoteliers and 57 tour operators. A series of difficulties were encountered before and during data collection. Lesson learned from this indicate that one need to be sensitive to the local context and ethical issues (Demeke & Olden 2012).

An exploratory design methodology is used to inform the research process. The research design uses Berg's (2007) spiralling research approach, Figure 4, using a forward and backward movement of processes in each research stage: for example, from idea, to theory, and back again; from theory to modify the idea; or

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from design, to data collection or vice-versa, from analysis to dissemination and so forth. The process, in its formulation provides a refining of ideas, theories, method, data collection, analysis, and dissemination. In this particular research, the method enables the proposal of the theoretical framework that guides the data collection, analysis, and dissemination of the research.

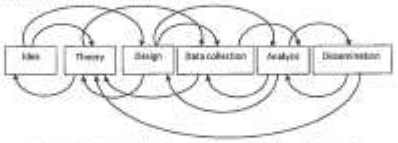

Figure 4. The Spiralling Research Approach adopted from Berg

5. FINDINGS

The finding indicates that all surveyed participants adopt mobile phone; however, adoption by the public is very low, 23.7 per hundred inhabitants. Hotels and tour operators that are catering for foreign customers tend to adopt broadband, website and e-mail in their businesses. The adoption of ICTs is given below in Table 1.

Table 1. The percentage of hoteliers and tour operators that adopt ICTs

ICTs Tool	Hoteliers		Tour operators	
	Adopters (%)	Non adopters (%)	Adopters (%)	Non-adopters (%)
Mobile phone	100	0	100	0
Computer	35.2	64.8	100	0
Broadband	14.8	85.2	98.2	1.8
Website	12	87.5	93	7
E-mail	32.8	67.2	98.2	1.8

The main adoption facilitators for hoteliers and tour operators tend to be their major customers. For example, there is a growing demand of Wi-Fi by foreign customers during their stay in the hotel, as a result hoteliers tend to adopt broadband to satisfy this demand. Similarly, tour operators and hoteliers need to communicate via e-mail to secure booking from their foreign customers hence they adopt this technology.

The main resistance agents for the adoption of ICT are lack of competition in the telecommunication sector, poor infrastructure, lack of knowledge and awareness of ICT use, and lack of finance and very expensive ICTs tools and services. The sources of these resistance/facilitator agents for the diffusion of ICTs are given below in Table 2.

Table 2. ICT adoption resistance/facilitator agents and their source

ICT	Agent	Facilitator/resistance	Source of Agent
ICT	Lack of competition in the telecommunication sector	Resistance	Political decision by the government
ICT	Lack of independent telecommunication regulator	Resistance	Political decision
ICT	Not affordable for many people 40% import tax on ICT 35% inflation Low level of GNI per capita	Resistance	Economic policy
Broadband/ email	Network externalities	Facilitator	Technological characteristics
ICT	Lack of knowledge and awareness	Resistance	Social factor, low level of education
ICT	Gender gap and age	Resistance	Social
Broadband	Lack of legal protection for small hotels	Resistance	Legal
Broadband	Competition among hoteliers	Facilitator	Organizational factor
ICT	Small size organizations	Resistance	Organizational factor
Broadband/email	Customers	Facilitator	Organizational factor

The findings from the research indicate that the Ethiopian government's decision not to liberalise the telecommunication sector is a political decision that has resulted in the dominance of a single, government owned telecommunication operator. The operator is unable to satisfy the demand for a telephone services resulting in low-levels of adoption rate. For example, it takes on average 8 years to get a telephone line (ITU, 2002). Furthermore, lack of independent and effective telecommunication regulatory body resulted in substandard service provision. This policy is a diffusion resistance agent affecting organisations and individuals and hindering the adoption of ICT.

Furthermore, the economic policy of a 40 % import tax on ICT equipment in addition to the current 35 % inflation rate has resulted in a very high level of ICT price. This policy has created another resistance agent for the diffusion of ICT for almost all social groups except a few rich individuals. These two resistance agents have created very expensive ICT services, for example, wired broadband services at the end of 2011 costs 85 % of the monthly GNI per capita. This indicates that the two main policy factors arising from the political and economic conditions are the two main factors for non-adoption of ICT.

Other diffusion resistance agent includes a lack of legal protection for small hotels renting properties from the government-housing agency. The agency has the power to evict tenants by giving them two weeks' notice. Minor technical modifications in the property, including installing sockets are not permitted by the housing agency. Furthermore, there is no guarantee on the length of tenancy that a hotel can operate in the premises. Many hoteliers stated that this is very restrictive condition for the adoption of ICT system. The lack of legal protection is another resistance agent for certain social groups.

In addition, other resistance agents affect adoption of ICT for different social groups such as gender, age, education these are arising from the underlying social issues. In this particular study the Political, Economic, Social, Technological, and Legal factors generate diffusion resistance and diffusion facilitator agents. However, no evidence has been found for environmental or cultural factors that generate resistance/facilitator diffusion agents.

The main adoption facilitator agent in the case of broadband originates from network externalities. Network externalities become significant when the number of users reached a critical mass. The classical example is the Public Switched Telephone network, where the value the user places on the system depends on the number of others with whom the user can communicate. Moreover, for the current travellers, e-mail, social network such as Facebook and Twitter are the links to the network externalities. To the traveller, access to these links is very important, as one hotelier respondent expressed the importance of wireless as follows: "Almost all our customers' first request is the availability of Internet in the hotel". At the same time, the number of hotels is increasing continuously, so do is the competition among the hoteliers and with limited number of tourists coming to the city, it becomes essential for the hoteliers to provide free wireless access to their customers. Hill (1994)also argues that firms adopt technology because of the demand from their major customers.

The main resistance factor of ICT adoption is the lack of competitiveness of the telecom sector in the country. As a result of having a single telecom operator, that failed to satisfy the growing demand and at the same time charge expensive fees for substandard service become a resistance factor of diffusion. The decision to have a single operator in the country is a political decision of successive governments' policies. In the case of the hotel and associated business, the effect is more pronounced because of having single software supplier and single hardware supplier for the majority of the hoteliers.

The theoretical framework enabled to highlight the source of resistance\facilitator agents. In this research, political decision not to liberalise the telecommunication sector, the economic policies of high level of import tax on ICT equipment, compounded with high level of inflation (35%) have significantly affect adoption negatively.

6. CONCLUSION

In this paper, Rogers' diffusion of innovation theory and its applicability for this research discussed. A new modified theoretical framework proposed and presented based on Rogers' diffusion of innovation theory. The theory tries to explain the non-adoption and adoption of ICT in the hotels and tour operators business in Addis Ababa. Using the proposed framework, adoption facilitator and resistance agents where identified and

presented and the sources of these agents identified. The main adopter facilitator agent found to be the effects of network externalities.

The adoption resistance factors that influence the non-adoption of ICT includes monopoly of the telecommunication provider, that fails to satisfy the demand. The decision to have a single telecommunication provider in the country by the government is a critical factor for the non-adoption of ICTs.

The sources of these resistance/facilitator agents are identified as political, economic, social technological and legal policies in the country. The proposed theory provides a framework to identify facilitator and resistant agents for the adoption and non-adoption of ICT in the developing countries. Identifying these agents and their sources provide a valuable tool for policy makers.

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